

Standley H. Hoch Named to Company's Top Finance Position

General Dynamics announced Feb. 13th that Standley H. Hoch has been appointed Executive Vice President of Finance and has been elected a member of the company's Board of Directors effective March 1st. Hoch joins the company after a distinguished business and finance career spanning more than 30 years with the General Electric Company.

"Standley Hoch has compiled an outstanding record while serving in finance positions of increasing responsibility at General Electric," said Stanley C. Pace, Chairman and Chief Executive Officer. "We are very pleased to have such a fine executive of proven ability join our management team."



Hoch

Reporting to Hoch will be James J. Cunnane, Corporate Vice President & Controller; Wayne Wells, Corporate Vice President & Treasurer, and George E. Rettig, Deputy Director-Internal Audit.

It was announced at the same time that Arch H. Rambeau, Corporate Vice President-Industrial Relations, will report to the executive office, with the new title of Corporate Vice President Human Resources.

Asaph H. Hall, Vice President and General Manager-Data Systems Division; John F. Langer, Manager of Corporate Flight Department, and Larry L. Allen, Corporate Director Administration, will report to President Oliver C. Boileau.

Hoch, 52, most recently was Vice President and Treasurer at General Electric and was responsible for corporate funds management, investments, foreign finance and insurance operations. He also was Chairman of the Board for General Electric's three insurance companies and was on the Board of Directors for the GE Financial Services Corporation.

Previously, Hoch held several important finance positions, including Vice President-Corporate Executive Office, Staff Executive-Corporate Strategic Planning and Vice President-Finance of the Canadian General Electric Company.

Early in his career, he spent 10 years in financial positions with the company's aerospace and defense group.

He was graduated from Oberlin College with a Bachelor of Arts degree in Economics in 1954 and joined General Electric that same year in the management training program. He left eight months later to enter the U.S. Air Force, returning to General Electric three years later.

Indonesia Requests Twelve F-16A/Bs

Congress has been notified that the Indonesian government wants to purchase 12 F-16A/B aircraft for its air force. Opposition to the sale, announced in late January, is not expected.

Indonesia, which requested eight single-seat F-16As and four dual-seat F-16Bs, will become the third country in Southeast Asia to procure the F-16 for its defensive fleet. Singapore and Thailand were the first two nations in that area to announce plans to purchase Fighting Falcons.

Currently, more than 1,500 F-16 multimission fighters have been delivered to the United States Air Force and the air forces of eight other nations, with deliveries to additional nations later this year and in the years to come. More than 2,500 additional F-16 aircraft are expected to be delivered through the mid-1990s.

Department of Defense Lifts Suspension After Agreement Is Reached with Company

The U.S. Navy on Feb. 7th announced that it had lifted the suspension of General Dynamics imposed on Dec. 3, 1985, while the circumstances surrounding the indictment of the company on Dec. 2, 1985, were being reviewed.

Everett Pyatt, Assistant Secretary of the Navy for Shipbuilding and Logistics, released the suspension after agreement was reached on a series of steps to be taken by the corporation and the establishment of an ongoing relationship within which the Navy will continuously monitor General Dynamics' activities and also review the circumstances involved in any future indictments that may arise from current investigations of the company.

The Navy press release said General Dynamics agreed to establish a \$50 million escrow account to cover potential liabilities resulting from the Dec. 2nd indictment and other ongoing investigations.

General Dynamics also agreed to government monitoring and monthly reporting on more than 50 major corporate actions that will be sustained over the five-year period of the agreement, the Navy said.

The press release added that the corporation has agreed that the costs associated with the development and initiation of a detailed contract compliance program would be

unallowable and to reimburse government administrative costs of \$500,000 incurred during the suspension.

The Navy concluded, as a result of these actions by the company, that the problems involved in the indictment have been satisfactorily addressed and has, accordingly, agreed to terminate the suspension of General Dynamics that was imposed in connection with the indictment.

It is the Navy's belief that the corrective actions undertaken by the company also effectively address shortcomings in General Dynamics that may be involved in other indictments.

In the event of future indictments of the company, the Navy said, the facts will be reviewed in the regular course of monitoring the company's conduct to assure that this is the case.

It is the objective of this procedure to avoid future suspensions of the company where problems, still the subject of criminal investigation, have already been corrected, the Navy said.

During the period of the suspension, DOD and General Dynamics also settled more than 20 existing cost-related issues, reducing DOD costs in excess of \$22 million, the press release reported.

Pace Pledges Full Support for the Agreement; Asks Employees' Aid in Its Implementation

Chairman Stanley C. Pace has pledged that the company will make every effort to take a number of actions agreed to by the company and the Department of Defense and has asked that all employees give their full support to meeting provisions of the agreement.

"We are gratified that, as a result of the U.S. Navy's action on Feb. 7th lifting the contract suspension, we are now in a position to move ahead on our many vital defense production programs," Pace said.

"The agreement requires that the company carry out a number of demanding action items," Pace said. "I have assured the Department of Defense, the Congress and the American people that we will comply fully with these provisions, and I have pledged the company's untiring efforts to meet these goals as quickly as possible."

"To meet this obligation," Pace said, "I need and expect the wholehearted support of the 100,000 men and women of General Dynamics. I am sure I can rely on our dedicated employees, who are as anxious as company management to clear up the cloud hanging over our heads so we can get on with the job of making some of the best defense industry products in the world."

Pace added that, because of its vital importance to employees, the full text of the agreement with the Navy is being published in this issue of *General Dynamics World*.

The six-page agreement, signed by Pace and Everett Pyatt, Assistant Secretary of the Navy for Shipbuilding and Logistics, is known officially as the "Agreement between General Dynamics Corporation and the Department of Defense Covering Provisional Termination of

Suspension and Establishment of a Continuing Surveillance Program."

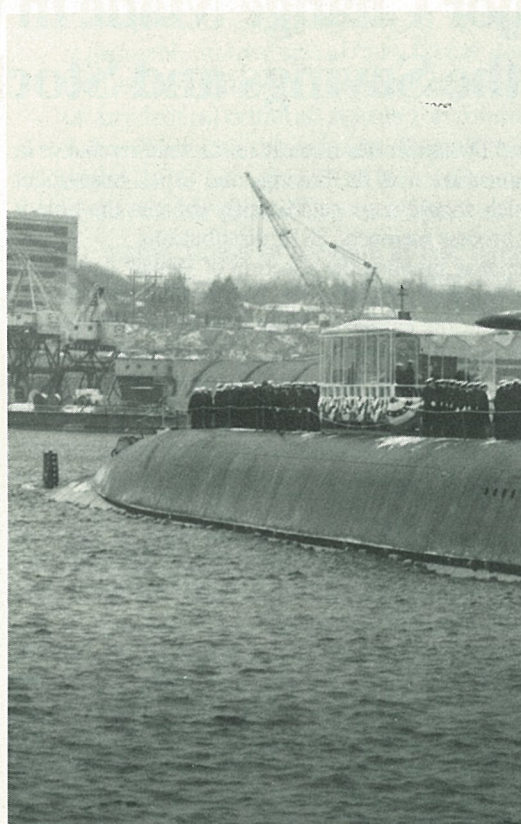
The agreement refers to two annexes. The first contains 53 separate action items in the areas of contract compliance, ethics program, time cards, accounting policy and controls, competition advocacy, spares/support pricing, security and internal audit. The second annex contains 19 action items involving business management policies and procedures.

The complete text of the agreement between General Dynamics and the Department of Defense appears on Page 3.

"I have asked all general managers to take personal responsibility for the implementation of these action items at their divisions," Pace said.

"The general managers will be responsible for communicating the details of the action items to the employees involved so that they will be fully understood," Pace said. "The general managers, in turn, will be calling upon employees at their divisions for their complete support in implementing these provisions as quickly and thoroughly as possible."

"Meanwhile," Pace said, "I hope that every employee reads the verbatim account of the agreement carefully, as the future of our company rests with how well we comply with it."



Trident Commissioned. Officers and crew of the USS *Alaska* stand at attention as the Trident submarine is commissioned at the Naval Underwater Systems Center in New London, Conn., Jan. 25th. (See related story on Page 6.)

GENERAL DYNAMICS
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Address Correction Requested

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Cessna Aircraft Co. To Be Wholly Owned Subsidiary in March

The Cessna Aircraft Company will officially become a member of the General Dynamics family next month.

In announcing the earnings for the fourth quarter and full year of 1985, the company said, "The 1985 results include operations for November and December of the Cessna Aircraft Company, which will become a wholly owned subsidiary of General Dynamics in the first quarter of 1986."

The company said it expected to consummate the previously announced merger in early March. General Dynamics presently owns more than 95 percent of the outstanding Cessna common stock.

In the report issued Feb. 13th, the company announced that earnings from continuing operations for the fourth quarter and full year of 1985 were \$90.4 million, or \$2.13 per share, and \$372.5 million, or \$8.80 per share, respectively. For the comparable periods of 1984, earnings from continuing operations were \$96.7 million, or \$2.16 per share, and \$352.9 million, or \$7.47 per share.

Sales in 1985 were \$2.3 billion for the fourth quarter and \$8.2 billion for the twelve months, compared to sales of \$2.0 billion and \$7.5 billion for the same periods in 1984.

Net earnings, including discontinued operations of Quincy Shipbuilding, for the fourth quarter and full year of 1985 were \$90.4 million, or \$2.13 per share, and \$383.3 million, or \$9.05 per share, compared to \$106.0 million, or \$2.37 per share, and \$381.7 million, or \$8.08 per share, in 1984.

The 1985 per share earnings are based on an average number of 42.4 million shares outstanding for the fourth quarter and full year, while an average of 44.0 million shares and 47.2 million shares were outstanding, respectively, for the previous fourth quarter and full year.

Funded backlog at the end of 1985 was \$14.7 billion, and funded and unfunded backlog totaled \$22.3 billion. The comparable figures at year-end 1984 were \$15.4 billion and \$22.2 billion.

"The 1985 results reflect the company's fine performance in designing and producing high-quality defense systems on schedule and on budget," said Stanley C. Pace, Chairman and Chief Executive Officer.

"Over the past months, management has made an intensive review of the company's business practices," Pace said. "We have initiated a number of short- and long-range actions to bring our administrative performance to the same high level of excellence which we have historically achieved in engineering and manufacturing."

Fort Worth Savings Set a Record in 1985

Fort Worth ended 1985 with record cost savings totaling \$286.4 million as a result of efforts in Cost Reduction and Value Control. This was an increase of \$62.1 million over 1984 savings.

The leading savings category in 1985 was Procurement Cost Improvement, with total savings of \$148.6 million at the end of the year. Productivity Improvement savings totaled \$81.8 million last year, and total savings in Value Control endeavors were \$32 million. Value Control includes Value Engineering Change Proposals and other cost reductions related to hardware.

Conservation/Resource Economic programs resulted in \$14.5 million in savings, and Fort Worth's Employee Suggestion program netted more than \$9.5 million in savings.

More than 12,500 employee suggestions were processed at Fort Worth in 1985.

In all categories except Employee Suggestions, the savings are calculated on the basis of Fort Worth's firm business projections. Employee Suggestion calculations are based on the first-year's savings on implemented ideas.

Series of Ethics Awareness Seminars Begins For Senior Management at All Divisions

Ethics awareness workshops for the senior management of all company divisions began on January 28th, when the first in a series of daylong seminars was held at Convair Division.

By the end of March, similar workshops will have been conducted at all company divisions and subsidiaries.

These workshops are attended by the general managers of the divisions and the program directors and staff heads who report directly to them.

These groups of 25 to 30 employees participate in discussions that help them to identify situations in their work environment that have ethical content and provide them with an understanding of the complexity of the ethical issues they may face.

The current series of workshops is also attended by the Ethics Program Director and the ethics program lead trainers from each division, who will work together with their respective general managers to establish and implement workshops appropriate for all employees of each division.

The ongoing workshops are led by Kirk O. Hanson, Professor of Business Administration in the Graduate School of Business at Stanford University; Gary Edwards, Executive Director of the Ethics Resource Center in Washington, D.C., and Kent Druyvesteyn, Corporate Ethics Program Director.

"The purpose of these workshops is not to teach ethics," said Druyvesteyn. "Instead, they are designed to provide the participants with approaches to resolve tough issues, taking into account the conditions under which we are operating today."



Ethics Discussion. Charles E. Blood, Division Vice President and Program Director-Phalanx, addresses Pomona's Ethics Awareness Workshop on Feb. 12th.

Major Change Made in the Administration Of the Savings and Stock Investment Plan

General Dynamics has recently made a major change in the administration of the Savings and Stock Investment Plan which should soon significantly shorten the time it takes to process members' SSIP distributions.

This change involves the selection of Hewitt Associates as the SSIP's new recordkeeper. Hewitt Associates is long established in the employee benefits field, servicing more than 100 major firms representing more than a million employees. Previously, Bankers Trust held this position.

Also, as a result of this change, plan members should now find it easier to track investment performance. Beginning with this issue, *General Dynamics World* will report the investment performance of the Fixed Income, Diversified Portfolio and Government Bond funds in terms of percentages. Looking at the table below, members will find the performance percentage of each investment fund for a recent 12-month period.

Previously, "unit values" were reported in the *General Dynamics World*, which members then had to recalculate to find their performance percentage. Since this percentage is now automatically provided, the use of unit values will be eliminated. This change will not alter the actual amount of any member's account.

This change in tracking performance does not apply to investments in the General Dynamics Common Stock Fund. Investment performance in company stock will continue to be reported in terms of the price of one share

"We want to give top managers the resources to implement the General Dynamics Standards of Business Ethics and Conduct as effectively as possible," Druyvesteyn said.

"These workshops are very important," said Stanley C. Pace, Chairman and Chief Executive Officer. "There are many decisions we face on a daily basis that are not covered by either formal policies or precedent, and we must rely on good judgment to make the right decisions. These workshops are designed to promote a lot of discussion on the ways of dealing fairly and effectively with such issues."

As part of the workshops, cases of business situations that could reasonably be encountered at General Dynamics are studied and discussed by participants. Careful examination of such specific situations, Druyvesteyn said, should lead to identification of the ethical issues and of the principles or values needed to deal with them.

"Ultimately, we want all employees to understand and be guided by the General Dynamics standards and commitments in all situations they face, including difficult and complex ones," he said.

"The workshop on business conduct and ethics was a thought-provoking session," said Alan M. Lovelace, Corporate Vice President and General Manager of Space Systems Division.

"The use of case studies provided our people with practical examples of ethical issues requiring discussion and resolution," he said, "We plan to continue the use of case studies in the workshops for Space Systems Division personnel."

of stock.

As before, plan members will find in their annual SSIP statements the total dollar value of their accounts as of the end of the calendar year. However, units will no longer be displayed with these dollar amounts. It's anticipated these statements will be issued in late March.

The following table shows each fund's investment performance from Oct. 31, 1984, to Oct. 31, 1985.

	Cumulative Annual Rate of Return from October 31, 1984 to October 31, 1985	
	Salaried	Hourly
Fixed Income	12.5%	12.5% *
Diversified Portfolio	22.5%	22.3%
Government Bonds	15.0%	15.1%
	Closing Stock Price as of	
	Oct. 31, 1985	Oct. 31, 1984
General Dynamics Common Stock	\$62.375	\$64.25

* Annualized percentage based upon first four months of Fund's performance, July 1985 through October 1985.

GENERAL DYNAMICS

World

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Agreement Between General Dynamics Corporation and The Department of Defense Covering Provisional Termination and Suspension and the Establishment of a Continuing Surveillance Program

1. On Dec. 3, 1985, the Department of the Navy (Navy) suspended the General Dynamics Corporation (GD) from contracting with any agency in the executive branch of the Federal Government. The suspension was based on the indictment of GD and four of its current or former executives for allegedly defrauding the United States in charging costs to contracts with the Department of Defense (United States District Court for the Central District of California No. CR-85-1123, filed Dec. 2, 1985). The policy set out in the Federal Acquisition Regulation (FAR) is that suspension and debarment actions are discretionary to be imposed for the Government's protection, not for purposes of punishment.
2. The Navy and GD have had extensive discussions about GD corporate and division policies and practices. As part of these discussions, GD and the Navy have identified actions to be taken by GD.
3. The Navy, on behalf of the Department of Defense, will terminate the suspension of GD and establish a program of continuous surveillance of GD as of the date of last signature of this Agreement and will not resuspend GD PROVIDED all of the following conditions are met. Failure to meet any of these conditions or to perform any of the actions identified in the Annexes and this Agreement within the time specified will constitute an independent cause for suspension or debarment of GD.
4. GD will:
 - (a) complete the actions described in Annex I on or before the dates shown on Annex I in a manner satisfactory to the Assistant Secretary of the Navy (Shipbuilding & Logistics);
 - (b) complete the actions described in Annex II on or before the dates shown in Annex II in a manner satisfactory to the Assistant Secretary of the Navy (Shipbuilding & Logistics);
 - (c) report monthly to the Assistant Secretary of the Navy (Shipbuilding & Logistics) on actions under (a) and (b);
 - (d) ensure that GD's performance under this Agreement is monitored by the Committee on Corporate Responsibility of the GD Board of Directors;
 - (e) during the term of this Agreement, provide the following classes of documents to the Department of Defense, including the administrative contracting officer and the resident DCAA auditor in each division: all (1) internal audit reports; (2) independent audit reports; (3) management effectiveness review reports; and (4) contract compliance review reports (generated between January 1986 and December 1990). The foregoing documents shall not include those which are covered by attorney-client and attorney-work product privileges and exceptions, nor those which do not relate directly or indirectly to defense contract operations. To the extent that such documents are covered by attorney-client or attorney-work product privileges and exceptions, GD will timely report to the Department of Defense on any matters identified in such documents which indicate violations of contracts, statutes, regulations and the GD Standards of Conduct;
 - (f) provide to the Department of Defense, including but not limited to the ACO and DCAA, reasonable access to all GD records to the extent necessary to assure that GD has performed each and every term of this Agreement to be performed by GD;
 - (g) maintain in all material respects for a period of five years from 13 Jan. 1986 the

actions described in Annexes I and II, the ethics, security and contract compliance review programs, and Accounting Policies and Control Systems developed as described in its submission of 13 Jan. 1986, and will obtain the prior consent of the Assistant Secretary of the Navy (Shipbuilding & Logistics) to any material change in these programs;

(h) Within 30 days of the date of last signature to this Agreement, deposit \$50 million in a separate escrow account with Chase Manhattan Bank. The funds in this account are to be available solely to pay, at the direction of the Assistant Secretary of the Navy (Shipbuilding & Logistics), civil and contractual liabilities of GD to the United States, if any, arising out of (i) the acts that are the subject of the indictment referred to in paragraph 1, and (ii) the acts occurring prior to this Agreement that may be the subject of any future indictment or civil false claims suit that is issued or commenced before Dec. 31, 1990, and that alleges any form of cost mischarging. The Assistant Secretary of the Navy (Shipbuilding & Logistics), and GD shall review the status of this account annually beginning in January 1988, to determine whether the funds in the account are adequate or any of the funds in the account may be returned to GD. Interest earned on the funds in the account will be paid to GD annually on the anniversary date of the deposit. Any funds remaining in the account (including principal and interest) after resolution of all such liabilities shall be returned to GD. GD shall be obligated to pay any additional amounts determined to be due and owing to the United States for which funds in the account are not sufficient;

(i) cooperate fully with any investigation by the Department of Justice (including the Federal Bureau of Investigation) or the Department of Defense (including its investigative agencies) of which GD knows or learns in the future, but without waiver of rights and defenses which the company by law is entitled to assert;

(j) upon indictment of any of the officers or employees of the Corporation for violation of any Federal criminal statutes, immediately remove all indicted officers or employees from active status with the Corporation;

(k) upon conviction of the Corporation for violation of any federal criminal statute, take appropriate disciplinary action against all responsible individuals. Upon future conviction of any officer or employee for violation of any federal criminal statute for conduct in connection with the individual's performance of duties for or on behalf of GD, take prompt action to fire such officer or employee;

(l) within 5 days of the date of last signature to this Agreement, pay to the Navy \$500,000 to reimburse the United States for the costs incurred by the United States related solely to the suspension of GD; and

(m) segregate all costs incurred for or on behalf of GD and the four individuals indicted with GD as described in paragraph 1, in connection with the Government's investigation, the related grand jury proceeding, and the defense of the criminal proceeding.

5. GD agrees that the costs described below shall be unallowable for Government contract purposes and shall not be charged directly or indirectly to any Government contract or subcontract:
 - (a) the costs of the contracts with Crowell and Moring, and Peat, Marwick, Mitchell & Co., in connection with the Contract Compliance Review Program;

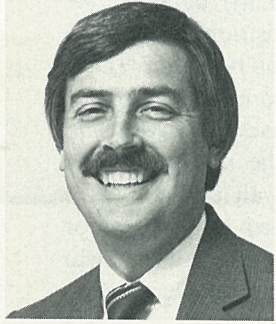
(b) in the event of conviction of GD or any of the named individuals under the indictment described in paragraph 1, (i) all costs (as defined in Federal Acquisition Regulation 31.205-47) incurred by or on behalf of GD or the named individuals in connection with the Government's criminal investigation, grand jury investigation, and the defense of the criminal proceedings; (ii) all costs of legal services (whether performed by in-house or private counsel), administrative and clerical services, costs of the services of accountants and consultants, salaries and wages of employees, officers and directors, travel costs, and any directly related costs, incurred by GD between 3 Dec. 1985 and the date of last signature to this Agreement, in connection with the suspension of GD and the presentations, written and oral, to the Navy in connection with the suspension; and (iii) salaries and benefits of employees placed on leave of absence as a result of the indictment referred to in paragraph 1; and

(c) salaries and benefits of employees placed on leave of absence as a result of any future indictments shall, upon conviction under the indictment, be unallowable.

6. GD shall within 90 days of the date of last signature of this Agreement adjust all billings already submitted to eliminate any costs described in paragraphs 4(m) and 5 that may have been included.
7. The Chairman of the Board and Chief Executive Officer of GD will meet periodically with the Deputy Secretary of Defense and the Secretaries of the Military Departments at their request to review performance under this Agreement.
8. In recognition of the actions set out herein, and subject to GD's compliance with the foregoing undertakings, the Navy on behalf of the Department of Defense agrees that it will provisionally terminate the suspension of GD and, in the event of a conviction of GD or any of its employees as a result of the indictment referred to in paragraph 1, it will not debar GD. Furthermore, GD will not be suspended or debarred based on an indictment or conviction for conduct occurring prior to the date of this Agreement if GD demonstrates to the satisfaction of the Assistant Secretary of the Navy (Shipbuilding & Logistics), that full implementation of the conditions in paragraph 4 eliminates the circumstances giving rise to the conduct, and that GD is a responsible contractor. In the event of future indictment(s) or conviction(s), the Assistant Secretary of the Navy (Shipbuilding & Logistics) will review the circumstances of the indictment(s) or conviction(s) and include, at his discretion, additional action items on Annex II.
9. This Agreement constitutes the entire Agreement between the parties and supersedes all prior Agreements and understandings, oral or written, with respect to the subject matter hereof. This Agreement shall inure to the benefit of, and be binding upon, the parties and their respective successors and assigns.
10. This Agreement shall enter into effect on the date of last signature hereto and shall, except for the escrow account and the obligation of GD under paragraph 4(g), continue thereafter for a period of five years. The escrow account shall terminate upon payment from the account of the last of the amounts described in paragraph 4(h) and GD's obligations under paragraph 4(g) shall terminate according to the terms of that paragraph.

Richard L. Corbin Named Division Vice President And Controller at Convair

Richard L. Corbin, former Vice President and Controller at Land Systems, has been appointed Division Vice President and Controller at Convair.



Corbin

Corbin, 39, joined General Dynamics in 1976 as a corporate financial analyst and spent six years at the Corporate Office in finance positions of increasing responsibility. He was a part of the team which integrated Chrysler's tank division into General Dynamics and was named Vice President and Controller there in 1982.

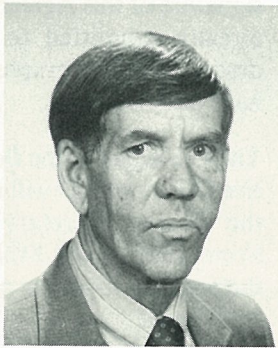
Corbin holds a Bachelor of Science degree in Business Administration from Kansas State University and has completed extensive course work toward a master's degree at the University of Texas at Arlington.

Howard Joep Jr. Named Top Convair Employee for 1985

Howard Joep Jr., a logistics specialist in Convair's Integrated Logistics Support organization, has been named Convair's 1985 Employee of the Year.

Joep received his award from Vice President and General Manager John E. McSweeney at the January meeting of the National Management Association, Convair Chapter.

In citing Joep, McSweeney said, "Howard is a unique individual whose expertise in the field is quite visible to the U.S. Government. His activities have a very distinct



Joep

bearing on the continued successful deployment of one of our nation's major defense systems — the Tomahawk cruise missile."

In responding, Joep said, "As everyone who works at Convair knows, anything we do, we do together. No individual can accomplish anything by himself, so I want to thank everyone who has helped me."

Joep, who joined Convair in 1978, won recognition for developing a delivery plan for Main Operating Base activation for the Ground Launched Cruise Missile (GLCM) in Europe.

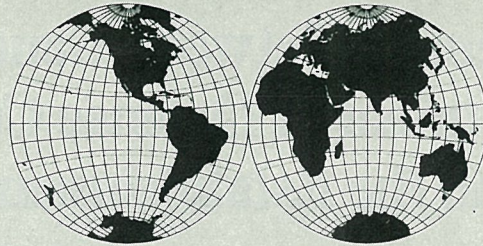
Ten other employees were nominated for the 1985 award. They are: Steven Allen, Senior Engineering Specialist in Cruise Missile Engineering; Dave Berry, Operations Chief at Sycamore Canyon; Steve Creighton, Financial Specialist in Cruise Missile Program Finance, and Richard English, Contracts Administrator in Contracts & Estimating.

Also, Alinda Giansiracusa, Chief of Production Technology Development in Manufacturing Technology; Beverly Kinzie, Communication Specialist in Program Development; Don Kolesar, Manager of Manufacturing/Material Control & Scheduling; Joe Mayer, Senior QA Specialist; Richard Ponce, Facilities Management Supervisor, and Jerry Williams, Senior Industrial Relations Representative.

Our Commitment As Employees

- *We will treat one another fairly and with the dignity and respect due all human beings.*

(From the General Dynamics Standards of Business Ethics and Conduct.)



Around the World

CHQ: William W. Hall transferred from Fort Worth and was appointed Cost Systems Corporate Director . . . David D. Baier joined as Corporate Senior Tax Attorney . . . E. Alan Klobasa as Corporate Assistant General Counsel . . . Paul D. Torres Jr. as Auditor . . . Ardelle C. St. George transferred from Convair and was promoted to Purchasing Agent . . . G. Joseph McCarthy was promoted to Management Systems Planning Manager . . . Victoria C. Mower to Corporate Manager-Capital Analysis . . . Robert M. Malmgren to Corporate Manager-Lexington Office . . . Stephen E. Pashia to Corporate EM/OS Systems Engineer.

Fort Worth: Ronald W. Albert was promoted to Foreman . . . Victor R. Ammann Jr. and Frederick W. Auld to Engineering Chief . . . Lester J. Backof Jr. to Senior Manufacturing Technology Engineering Specialist . . . John F. Betsill Jr., Roland P. Cyr, John R. Hart, T. Shannon Hunter II, Robert A. Knezek and Robert J. Zamboni to Project Engineer . . . Mark S. Bober to Project Coordinator . . . Homer E. Boyd Jr. to Material Program Administrator . . . Steven A. Carroll, John S. Hill and Paul F. Monk to Field Service Engineer . . . Jimmy R. Caster to Manufacturing Control General Supervisor . . . Ronald W. Connolly, Gary C. Norton and Thomas A. Siler to Logistics Group Engineer . . . Robert D. Davis, Alex D. Risky and Joseph B. Schlechte to General Foreman . . . Johnny H. Davis to Production Specialist . . . David Destena to Senior Manufacturing Technology Engineer . . . Leslie J. Farmer to Senior Logistics Engineer . . . Pamela R. Fiederlein to Subcontract Management Coordinator . . . David E. Funderbur to Logistics Engineer . . . David Garrett to Fabrication Control Manager . . . Robert V. Hartzell to Senior Facility Engineer . . . Ronnie R. Horn to Tool Manufacturing General Foreman . . . Edward Ingram to Sanitation Chief . . . Marcus M. Lauderdale III and Dennis D. Stuart to Industrial Engineering Supervisor . . . William J. Loomis to Material Planning Chief . . . Robert M. McIntosh and George L. Parker to Program Specialist . . . Adrian C. Moore Jr. to F-16 Plans and Controls Chief . . . Leslie K. Norris to Administrative Assistant . . . Leonard W. Patterson to Logistics Group Supervisor . . . Randle J. Phipps to Tooling Supervisor . . . Fredric E. Roth to Associate Counsel . . . William E. Taylor to Production Management Specialist . . . Brian D. Tomlinson to Numerical Control Supervisor . . . Dena G. Walker to Senior Quality Control Engineer . . . R.C. Walker to F-16 International Production Manager . . . Ralph W. Woodrey to Engineering Program Manager . . . Buddy J. Wright to Engineering Administrative Group Supervisor . . . Gregory L. Wyckoff to Buyer.

Pomona: Jack L. Brady was appointed Manufacturing & Production Engineering Phalanx Product Line Director . . . Raymond R. Smith to Stinger/Stinger-POST Gyro-Optics Product Line Director . . . Ralph G. Webster to Manufacturing & Production Engineering Standard Missile Product Line Director . . . James F. Mahoney was promoted to Engineering Group Supervisor . . . Theodore H. Bohl, Richard B. Howard, Richard E. Huffman, Kenneth L. Mutz, Danny H. Diaz, Hamid S. Razi, John E. Trexel and James Yarnell to Group Engineer . . . Francis M. Gault and Richard L. Bullard to Material Control Supervisor . . . Timothy D. Hoover and Gary G. Griffith to Project Representative . . . Gene T. Hudspeth, Jackie Leavell and Chris J. Coffield to Superintendent . . . Paul M. Tucker to Industrial Engineer . . . Leroy W. Brown to Project Engineer . . . Gregory J. Doriguzzi to Senior Management Systems Analyst . . . Julian R. Atkins Jr. to Plant Engineering Manager . . . Vincent S. Borsattino to Scheduling Services Manager . . . Jimmy M. Domico and Steven J. McIntosh to Estimating Manager . . . Virgil J. Gross Jr. to Factory Manager . . . David E. Hriczak to General Accounting Manager . . . Donald G. Humphrey to Quality Assurance Manager . . . Robert Morales to Industrial Accounting Manager . . . James Salata to Maintenance Manager . . . Jeff L. Stevenson to Departmental Administration Manager . . . James W. McSwain to Material Control Chief . . . Douglas G. Carter and Richard G. Hines to Estimating Chief . . . Eugene Davidofsky, Clarence J. Dreany and Edward Robles to Plant Engineering Chief . . . Lewis C. Rich and Robert M. Taylor to Contracts Chief . . . Robert E. Brown and Ronald N. Nordstrom to Plant Engineering Supervisor . . . Kenton W. Morrett to Test Engineer . . . Fred W. Papay and Karen L. Seraj to Project Administrator . . . Barbara A. Peterman to Senior Contract Administrator . . . Andrea J. Parker to Contract Administrator . . . Lilian Vermillion to Estimating Administrator . . . Richard C. Sweet to Estimating Specialist . . . Joanne E. White to Manufacturing Engineer . . . Robert T. Boucher and Leroy R. Dupper to Construction & Maintenance Superintendent . . . James R. Futrell to Construction & Maintenance Supervisor . . . Scott M. Kittrell to Procurement Administrator . . . Gary W. Panzer to Engineering Specialist . . . Geryldeen E. Schack to Accounting Coordinator. At Camden, David L. Byrum, William F. Casteel, Joy J. Cole and Daniel T. Shockley to Manufacturing Supervisor I . . . Linda D. Bambico to Production Coordinator . . . Nancy Bozich to Senior Program Analyst.

Valley Systems: Dora M. Bencomo was promoted to Engineering Group Supervisor . . . Charles W. Kessel to Security & Investigation Supervisor . . . Julio W. Longoria to Procurement Manager . . . Herbert G. Nolan to Project Administrator . . . Allan Calomino to Estimating Manager . . . William L. Chittick to Industrial Engineering Manager . . . Kevin P. Daugherty to Facilities Planning Manager . . . James D. Hoffman to General Accounting Manager . . . Mary J. Chesus, Wayne E. McNabb and Rae M. Rottman to Cost Control Manager . . . Aime J. Puntous to Senior Staff Engineer . . . Carla E. Snyder to Senior Cost Administrator . . . Thomas D. Thielo to Industrial Engineering & Design Chief.

Convair: Charles B. Simmons was appointed to Program Development Services Director . . . Allen R. Stowinsky was promoted to Program Engineering Manager . . . Alfred E. Pope to Industrial Relations Manager . . . Angel L. Rodriguez to Manufacturing Operations Supervisor . . . James G. Macoubray III to Communications Services Chief.

Space Systems: Gary S. Kruse was appointed to Engineering Director-Systems Analysis . . . Thomas J. Underwood was promoted to Facilities Planning Operations Supervisor . . . Anthony J. Valentine to Engineering Estimating Chief . . . Edward F. Corbett to Engineering Lab Supervisor . . . Lester B. Wolf to Engineering Supervisor . . . Richard F. Gibb and Charles R. Goforth to Manufacturing Operations General Supervisor . . . Thomas H. Merrill to Estimating Manager.

Electronics: Robin L. Philp was appointed to Marketing Director . . . Homer T. Terry was promoted to Marketing Manager . . . Allan R. Walker to Engineering Manager.

Electric Boat: Thomas Haggerty was appointed to Nuclear Test & Construction Director . . . Robert Mason was promoted to SRA Assistant Program Management Chief . . . Janice Stimac to Administrative Services Chief . . . George Lamothe to Administrative Control Chief . . . Bruce Gregory to Industrial Relations Site Manager . . . Curtis Kilpatrick to Nuclear Quality Control Site Manager . . . Francis Miceli to Planning Site Manager . . . William Newton to Cost Control/Administration Site Manager . . . Vangel Athanas to Industrial Relations Site Chief . . . Gail Ascare to Administrative Control Coordinator . . . David Barry to Personnel Supervisor . . . William Bartelli to General Foreman . . . Frederick Bridge to Trade Planning Supervisor . . . Peter DeMarco and Phyllis Gregory to Administrative Control Coordinator . . . Richard Finnigan to Third Shift Operations Superintendent . . . Bruce Hart to Superintendent . . . Jeanne Holmgren to Senior Cost Analyst . . . Niels Jorgensen and Charles St. Germain to Engineering Supervisor . . . Alexander Koczanski to Associate Engineer . . . Edward Miceli to Accounting Supervisor . . . Michael O'Neill to Group Trade Planner . . . Ronald Swanson to Senior Logistics Analyst . . . Neil Whitehead to Change Control Supervisor. At Quonset Point, Paul Marsiglio to Configuration Management Supervisor.

Land Systems: Thomas R. Kozlowski was promoted to Senior Production Engineer . . . Robert J. Kucera to ILS Manager . . . Donald E. Kleist to Engineering Assistant Program Manager . . . Thomas F. Offer to Engineering Manager . . . William M. Schwartz to Engineering Services Manager . . . Raymond D. Bothwell to Engineering Services Chief . . . John T. Lewis to Engineering Supervisor.

GDSC: Maxwell F. Blanchard was promoted to Albuquerque Operations Manager . . . George A. Washabaugh to Finance/Administration Manager-Aircraft Support Programs . . . Paul L. Dalbec to Medical Services/Safety Supervisor . . . George M. McIntosh to Maintenance and Training Supervisor . . . Eugene L. Bardelski to Manufacturing Engineering Specialist . . . Roger K. Brandon to Maintenance Group Leader . . . Karl W. Meek to Senior Estimating Specialist . . . Bernard A. Jones and Richard L. McMaster to Senior Engineer . . . Timothy W. Johnson to Engineer . . . Dorothy C. McDonald to Senior Accounting Analyst.

Quincy: Mary Osgood was promoted to Telecommunications Supervisor . . . George Gill and Earl Brown to Associate General Counsel . . . William Mildrum and Richard Fitzpatrick to Foreman.

Electronics Division Delivers First IATE For B-1 Bomber

The first B-1B Intermediate Automatic Test Equipment (IATE) station to be delivered to the U.S. Air Force by the Electronics Division has been received at the Technical Training Center at Lowry AFB, Denver, Colo.

The IATE stations are used in the avionics repair shop to perform automatic functional testing and fault isolation on the offensive and defensive avionics of the B-1B bomber. Each will be capable of testing 165 line-replaceable units in the airplane's avionics subsystems.

Electronics Division has been developing and producing the B-1B IATE stations under contract from Rockwell International, builder of the aircraft. When installed and checked out, the Lowry station will be operational ahead of contract schedule.

During final inspection and checkout, the station was determined by Rockwell and U.S. Government inspectors to be without any manufacturing discrepancies, or in "zero defects" condition. Additionally, it passed its seven-hour acceptance test with no tuning adjustments, handling the 450,000 lines of software in the test without a single failure or need for retest.

Although this is the first test station to be delivered to the Air Force, Electronics has been delivering finished stations under its contract to Rockwell for the past year. These stations have been sent to the B-1B contractors who are developing the avionics subsystems and will be transferred to the Air Force in the future. A total of 55 test stations and 14 program development stations are called for in the contract.



Test Station Installed. Vera DeMichele, Quality Engineer at Electronics Division, gives some pointers to U.S. Air Force technicians on the B-1 Intermediate Automatic Test Equipment installed recently at the Lowry Technical Training Center in Denver, Colo. It was the first set delivered directly to the USAF.

Employees To Earn U.S. Savings Bonds

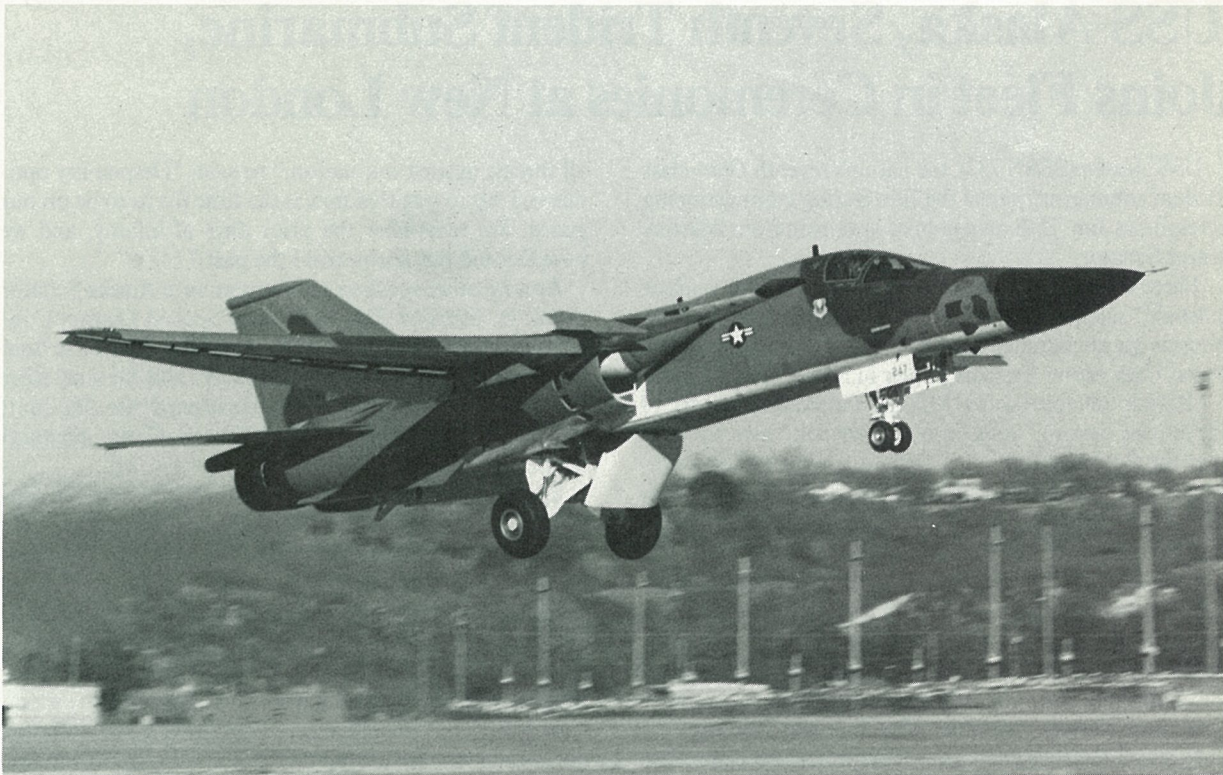
Employees at the Lima Army Tank Plant soon will be earning U.S. Savings Bonds through a U.S. Army-sponsored program to save energy costs.

Called "Energy Savings Actions," the program may be the first involving contractor employees at a government-owned, contractor-operated plant. It is being set up by the plant's Cross Services Engineering department, Lt. Col. Elton D. Minney, plant commander, and many Land Systems and government personnel.

Under the program, employees will receive \$50 or \$100 savings bonds for original ideas that result in energy savings.

"The program is not a contest in which only the best idea gets an award," said J. F. Manzi, Manager of Cross Services. "Awards will be given for all practical ideas that result in real energy savings. The amount of the award will depend on the dollars saved."

Employees earning savings bonds will be honored at quarterly Lima plant Energy Council meetings. They will also receive a certificate signed by Colonel Minney and H. B. Roberts, Plant Manager.



FB-111A Takes Off at Fort Worth on First Flight after Completion of AMP Modifications

FB-111A in AMP Makes Its First Test Flight

The FB-111A Avionics Modernization Program (AMP) trial installation aircraft was flown last month at Fort Worth for the first time since the beginning of its modification 24 months ago.

The initial two-hour flight was described as an "outstanding success" by James I. Humphries, Manager of the F-111 AMP Program. "The initial flight verified the integrity of the aircraft configuration and the new avionics. The extensive flight test program that is planned for the aircraft can now begin," Humphries said.

After the completion of preliminary testing at Fort Worth, the aircraft will be delivered to the U.S. Air Force's

Sacramento Air Logistics Center at McClellan AFB, Calif., for a period of developmental and operational testing and evaluation.

The AMP avionics have already undergone several months of integration testing at Fort Worth.

The principal upgrade under the program, in which the entire USAF FB-111A fleet will be modified, is replacement of a first-generation, 20-year-old digital bomb-navigation system with a modern digital system. This and other AMP modifications offer significant improvements in reliability and maintainability at reduced logistic support costs.

When It Comes to Racing Dogsledding Teams, Electric Boat's Bob Mitchell Is a Heavyweight

Bob Mitchell probably would have the least excuse of anyone at Electric Boat for missing work because of a snowstorm.

Mitchell, an automated fabrication technician at the Quonset Point, R.I., facility, has a team of three Siberian huskies that are more than a match for any steel-belted radial tires.

"You never know when a dogsled will come in handy," Mitchell said. In 1978, after a big blizzard, he had his team out while most people's cars were buried under the snow. He came across a stranded motorist whose ignition system was frozen, and Mitchell mushed away and returned soon with a can of deicer.

Within minutes, the car was running smoothly. "I've got to take your picture," the pleased motorist told Mitchell. "No one will ever believe this!"

A dogsled enthusiast for the last 12 years, Mitchell credits his interest in the sport to his Canadian grandparents and an early TV series, "Sgt. Preston of the Yukon," which he watched as a boy. "Sgt. Preston had a faithful husky named 'King,'" he said, "and I always thought I'd like one of those dogs."

Shortly after he and his wife were married, they bought a husky named Mic Mac, who now is 12 years old and retired.

The Mitchells got into racing after they responded to an ad for a training clinic conducted by a sled-dog club and tried out a one-dog sled for beginners. "That was all we needed to get hooked," Mitchell said. They soon bought a female, Kachina, and one of the dogs they now own is the offspring of Kachina and Mic Mac.

The Mitchells now have 12 dogs — four retired, three active and five puppies for next year's racing team.

There is plenty of racing in the area. Clubs in Rhode Island, Massachusetts and Connecticut host three competitions every winter. Last year, Mitchell, who is 5 feet 10 inches tall and weighs 295 pounds, won the Super Heavyweight Division.

Mitchell, who has four children, said dogsled racing is good family activity, and "That's what we like most about it."

Ideal conditions for dogsled racing, Mitchell said, are about five inches of packed snow. But that's not always available, of course. What about when there's no snow? "Then we use three-wheeled rigs called gigs," he said.

Mitchell pointed out that races don't have to be run with huskies, either. "We had a team of collies run in a

race," he said. "I've seen a team of Irish setters pull a sled, and I've seen foxhounds entered."

Mitchell said once he even saw a sled pulled by a Bouvier des Flandres, a large and powerfully built Belgian dog used mostly for herding and guard work.

"Sometimes it gets pretty comical," he said.



Mush! Mush! Bob Mitchell puts his dogsledding team through its paces. Lucky is on the left, Tahnzi is on the right, and Mic Mac is in the back.

USS Alaska, Seventh Trident Submarine, Joins Fleet in Ceremonies at New London

USS *Alaska* (SSBN 732), the nation's seventh *Ohio*-class Trident submarine, joined the fleet during commissioning ceremonies Jan. 25th on a note of optimism from Alaska's senior Senator.

There is hope now for "building down . . . our nuclear arsenals," said Senator Ted Stevens, addressing some 1,800 pierside guests bundled against frigid temperatures at the Naval Underwater Systems Center in New London, Conn.

"Recent statements (by Mikhail Gorbachev, leader of the Soviet Union)," said Senator Stevens, "give us hope that the Soviets see there is mutual advantage to a balanced, fair, verifiable and equitable realignment of our nuclear strength and the beginning of a period of building down, not up, our nuclear arsenals."

"For the first time in many years," Senator Stevens said, "I am optimistic that we can find the way to negotiate a meaningful agreement which will be the first of a long series of agreements to assure the future of mankind on this globe."

Senator Stevens cautioned that it is still necessary to maintain deterrence and vigilance to protect freedom. "We know that we cannot achieve agreement which will remove

all threats against our nation," he said. "Despite my optimism, I say to you that now is the time for us to be on our guard. We remember the prior days of infamy, and we have learned our lesson from the past."

Among other speakers at the event were Alaska Senator Frank H. Murkowski; Connecticut Second District Congressman Samuel Gejdenson; Fritz G. Tovar, Electric Boat Vice President and General Manager, and Stevens' wife, Catherine Ann. Mrs. Stevens christened the 560-foot, 18,750-ton ship at Electric Boat's Groton, Conn., shipyard on Jan. 12th, 1985.

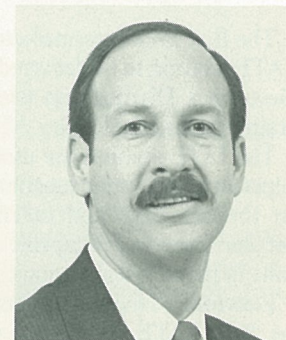
The division, which has five more Tridents under construction, delivered the USS *Alaska* on Nov. 26th — 94 days ahead of contract schedule. She was the 14th consecutive ship delivered early.

USS *Alaska* is the first submarine and the fourth U.S. naval vessel to bear the name. Her predecessors were a gunboat which served from 1869-1883, a minesweeper which saw service in 1918 and a heavy cruiser (CB-1) which joined the fleet in 1944 and earned three battle stars for her combat service during the final months of World War II in the Pacific.

Carion, Baranouskas And Gorton Named To New Positions



Carion



Baranouskas

Three key executive appointments have been announced at Land Systems.

A. William Carion has been appointed Division Vice President and Program Director of the M1 tank program, Thomas J. Baranouskas has been appointed Division Vice President and Controller, and John V. Gorton has been appointed Program Manager-M60.

Carion joined Chrysler Corporation's Defense division as a project engineer in 1955, after three years' service with the U.S. Air Force.



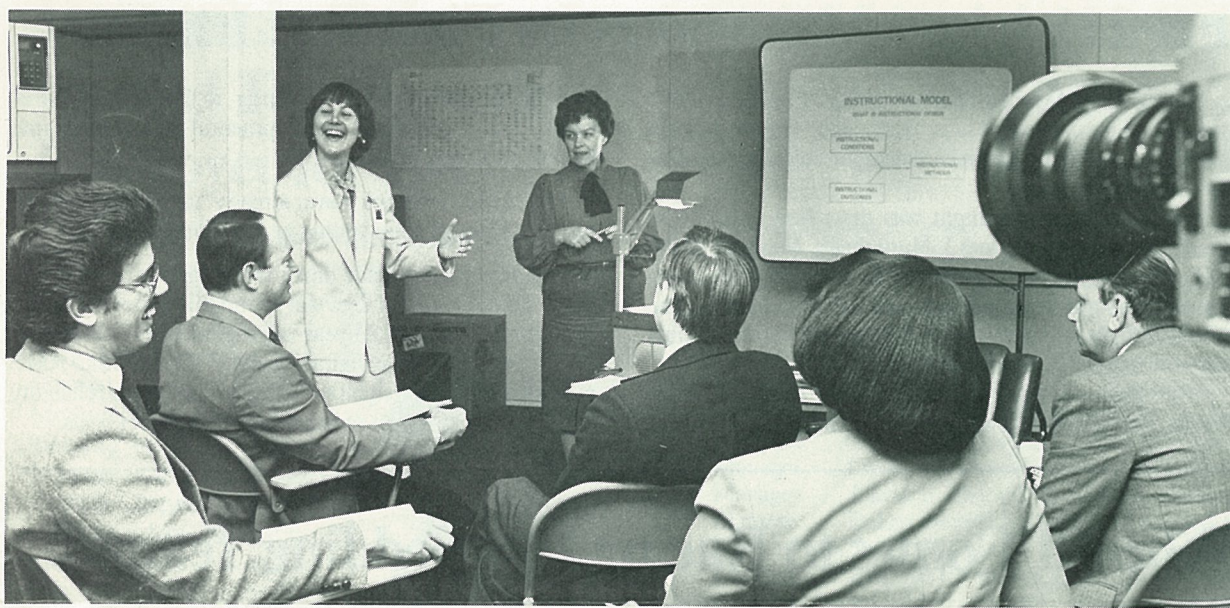
Gorton

A native of Detroit, he received a Bachelor of Science degree in Mechanical Engineering at the University of Detroit in 1951 and earned a Master of Business Administration degree from Wayne State University in 1967. He has served as M60 Program Director since General Dynamics acquired Chrysler's tank operations in 1982.

Baranouskas joined General Dynamics at Fort Worth in 1977 as a financial specialist, after serving eight years as a program planner with Vought Aeronautics. He was assigned to the Financial Planning Staff at the Corporate Office in St. Louis in 1979 and appointed Controller at Land Systems' Lima, Ohio, plant in 1982.

Baranouskas, a native of Fort Lewis, Wash., received a Bachelor of Science degree in Mathematics from Tarleton State University in 1969 and earned a Master of Business Administration degree from the University of Dallas in 1976.

Gorton, a Detroit native, earned a Bachelor of Science degree in Mechanical Engineering from Wayne State University in 1957. He joined Chrysler's Defense division in 1952 as a draftsman. He has held a series of increasingly responsible management positions, including Engineering Manager on the M60 program.



Training Instruction. Video equipment was used as a training device during a series of sessions in the Manufacturing Resource Planning (MRP) program at Land Systems' Sterling, Mich., plant. Carole Rowland (standing, left) made a point during the rehearsal of the presentation given by Rosemarie Easterling, Lima plant Accounting, to other instructors from Manufacturing and Accounting. The instructors, in turn, will conduct MRP classes for about 80 percent of Land Systems' personnel who will be involved the program.

Charla Wise's Engineering Career Parallels The History and Development of the F-16

Tracing the history of employee Charla K. Wise's career with General Dynamics is somewhat like tracing the history of the F-16 aircraft from the full-scale-development (FSD) stage onward.

Shortly after Fort Worth received the FSD contract in 1975, Wise joined the division following graduation from the University of Michigan with an Aeronautical Engineering degree. Her first assignment was in the Engineering Department's F-16 propulsion section, where she was involved in prediction and analysis of primary power-system performance for the FSD and production F-16 versions.



Wise

In 1977, she participated in a rotational assignment to Edwards AFB, Calif., as one of the engineers supporting the FSD flight-test program. Upon return, her assignments varied from advanced design, where she worked on advanced secondary power systems, to advanced propulsion analysis, where she served as program coordinator for a Variable Cycle Engine study.

In 1980, when the F-16 was well into production, Wise moved from Engineering to the F-16 Program Office, working with the Change Management function. Next, she was assigned to the F-16XL Program Office, where she worked in the Plans and Control area and with the U.S. Air Force's F-16 System Program Office in F-16XL proposal activities. She later returned to the F-16 Program Office as Co-Chairman of Change Coordination meetings and primary presenter at the Change Control Board.

Wise was appointed to her current position, Manager of F-16 Programs for block 25 through block 30F, last

November. She is now responsible for monitoring all F-16C/D hardware development and production activities, as well as for monitoring the field performance of F-16C/D aircraft that have already been delivered. "My main function is to make sure that all the new systems, changes and features get incorporated smoothly and in a timely manner," she explained. "The biggest change coming in 1986 is the transition to block 30, the version of the aircraft that will include the common engine bay, F110 engine, seal bond fuel tanks and additional avionics memory expansion."

The latest stage in her advancement with the company corresponds with the effort to produce what will be the most capable, advanced version of the Fighting Falcon at the time of the first block 30 delivery.

Wise recognizes that her current job is a demanding one that requires careful time management — something that she has become quite skillful at in recent years, while balancing family and career responsibilities.

She and her husband, Michael, are the parents of a son, Christopher, who will be 4 in April, and an 18-month-old daughter, Susan. Michael Wise, a former Fort Worth employee, is Director of Human Resources for a company in Dallas.

Wise has served on the Board of Directors of Fort Worth's National Management Association chapter, has been a Junior Achievement advisor and was active in the Big Brothers and Big Sisters organization. She has also worked with the National Alliance of Business, with a city organization that strives to interest minority high school students in engineering careers, and has served as General Dynamics' Corporate Project Leader for activities associated with the Society of Women Engineers' National Convention. In addition, she is captain of the General Dynamics recruiting team that contacts students at the University of Michigan.

Deliveries of F-16s Pass 1,500 Mark

1986

The 1,500th F-16 Fighting Falcon produced worldwide was delivered to the U.S. Air Force from General Dynamics' aircraft manufacturing plant at Fort Worth Feb. 13th.

The aircraft, an F-16C, has been assigned to the 50th Tactical Fighter Wing at Hahn Air Base in West Germany. It was the 154th F-16C/D delivered to the USAF since the advanced model was introduced in July 1985.

Five allied nations have also ordered the F-16C/D, and three will receive their first aircraft later this year.

The F-16 has been in production for more than seven years. The aircraft is currently operational with nine air forces at 28 bases located in 13 countries, and more than 4,000 have been ordered by 15 air forces.

Zimmer Leads Session On U.S. Savings Bonds

Dan S. Zimmer, Fort Worth's Division Vice President-Industrial Relations, was selected by the Department of the Treasury to lead a "breakout session" at the 1986 U.S. Savings Bond Campaign Leadership Conference held last month in Washington, D.C.

Zimmer was selected for this position because of his success in promoting U.S. Savings Bonds as the Campaign Chairman for Tarrant County, Tex., and his involvement in the Fort Worth Division campaign.

At the conference, Zimmer gave a presentation on the 1985 Fort Worth Division campaign and spoke on strategies for conducting a successful bond campaign.

Pomona Employees Who Own and Fly Airplanes Are Partial to Cessnas

Pomona employees who love to fly their own airplanes are partial to Cessna aircraft.

At least 10 employees independently own and fly a variety of Cessnas, and a group of 17 other pilots owns a Cessna 172 airplane.

The group of 17 belongs to Aero-Flyte of Pomona, Inc., a nonprofit flight and general aviation social club organized to provide safe, club-owned aircraft, assure professional instruction to its members and promote interest in general aviation. Membership is limited to 18 members for the one plane now owned by the club.

By coincidence, all the members are employees or former employees of Pomona, although that is not a requirement for membership.

The current club officers are: Terry Hudson, President; Jack Pickering, Vice President; Steve Spires, Secretary; Gene Anderson, Treasurer, and Matt Earle, Maintenance Officer.

The club was incorporated in California in 1970. The first General Dynamics employee to join was Warren Seyfert, who became a member in 1972 and still is a member today. The group started with a two-seat Cessna 150 but has continually upgraded the equipment and is now using its fifth successive Cessna 172.

The club's Cessna is a single-engine, high-wing four-seater, with fixed landing gear, fixed pitch propeller and 160-horsepower engine. The high wings facilitate passenger enjoyment of the aerial view, while the fixed propeller and landing gear afford low maintenance. Latest improvements to the plane include new engine, exterior paint and upholstery.

The plane also is equipped with modern avionics, including full capability for flight in instrument conditions. It has a 500-mile range and can be taken up for a lunch hour, a weekend or for extended vacation trips.

The plane is also used for training anyone who wants to learn to fly and join the club. Three members — Jim Bailey, Spires and Richard Thorpe — are commercial pilots and flight instructors. Of the 35 former and current members, 16 learned or are learning to fly with the club's plane. Spires and Thorpe instructed the majority of these students.



Pomona Employee-Pilots. Members of Aero-Flyte of Pomona, Inc. pose in front of their Cessna 172 aircraft. They are (left to right) David Hudson, Thomas Deighan, Jack Pickering, Scott Schoneman, Steve Spires, Matt Earle, Gary Henshaw, Robert Scherer, Jim Bailey and Terry Hudson.

The cost for membership is \$43 per month plus \$21 per hour of flight, including fuel. This covers maintenance costs and upgrading to newer planes. Spires said, "The club has been structured to be financially sound. Our maintenance costs are adequately covered by our fixed and hourly charges. When we upgrade the aircraft, the loan fees are covered by those same charges."

There have been no accidents or injuries in the 14-year history of the club. According to Thorpe, the excellent safety record is "due in large part to the responsible attitudes of the members. We perform and teach thorough

preflight checks and have conservative attitudes toward 'go/no-go' decisions."

Pickering added, "Our club's instructors focus heavily on safety, conservatism and passenger comfort. One of the major benefits is that the club arrangement offers an affordable way to experience the joy of flying."

In addition to the club officers and instructors, other members are: Seyfert, James Cannon, Thomas Deighan, Gary Henshaw, David Hudson, Erick Morrison, Don Owens, Scott Schoneman, Robert Zeiter and Robert Scherer.

Den Leader Gives British and American Cub Scouts a Common Interest

A chain of coincidences involving the U.S. Air Force Thunderbirds, an F-16 avionics supplier from Great Britain and the World Brotherhood of Scouting has provided a way for Fort Worth security guard Douglas S. Robinson to broaden the awareness of the den of Cub Scouts he leads.

Robinson is Den Leader for seven boys, aged 8 to 10, in Watauga, Tex., a Fort Worth suburb. A few months ago, he was issuing a visitor's pass at one of the Fort Worth plant entrances when he noticed that the British subject receiving the pass was wearing a pin bearing the international fleur-de-lis insignia of the World Brotherhood of Scouting.

Robinson asked about the pin and learned the visitor, Andy Cooper from GEC Avionics in Billerica, Essex, also was a Scout leader. The two talked briefly, exchanged addresses and later began to correspond, usually writing about their common interest in scouting. Robinson has been involved in scouting many years and holds the rank of Eagle.

The boys in Robinson's Cub group, Den 6 of Pack 555, have identified with the USAF Thunderbirds for some time as a result of the fact that Robinson works at General Dynamics and their enthusiasm for the F-16.

Robinson obtained the Thunderbirds pilots' autographs for den members last year when the Flight Demonstration Team pilots visited the Fort Worth plant, and the boys have adopted the Thunderbird emblem on their den banner. "The emblem is appropriate for the group because of its patriotic colors and the fact that it is actually an American Indian symbol, which fits well with the program for advancing in Cub Scouting by earning arrow points," Robinson said.

The den also uses the unofficial team name of the Thunderbirds, "Ambassadors in Blue," because it fits the color of the Cub Scout uniform and reminds the boys of scouting's precept of good citizenship.

As a result of his correspondence with the British Scout leader, Robinson thought of a way for den members to become ambassadors in a more literal sense — by exchanging letters with members of his friend's Scout group in Great Britain. The plan was put into action last year and has been so successful that the members of Den 6 have become qualified to receive Scouting's International Activity Badge, an award usually presented to youths of Boy Scout age.

The den members write their letters at the same time and mail them to the English Scout leader in a package. The Scouts in England send their letters the same way, and the den has "mail call" when the answers are received.

Robinson said the correspondence has helped the Cubs learn about other nations. "The biggest problem most youngsters have in sharing ideas with people from other countries is that they don't have a common ground," Robinson said. "In this, they have the common interest of scouting."

Some cultural differences are obvious to the Cubs as they read the return letters, Robinson said. "For example, our Cub Scout Promise mentions 'duty to God and country.' In the British promise, it is 'duty to God and the

Queen,'" he explained.

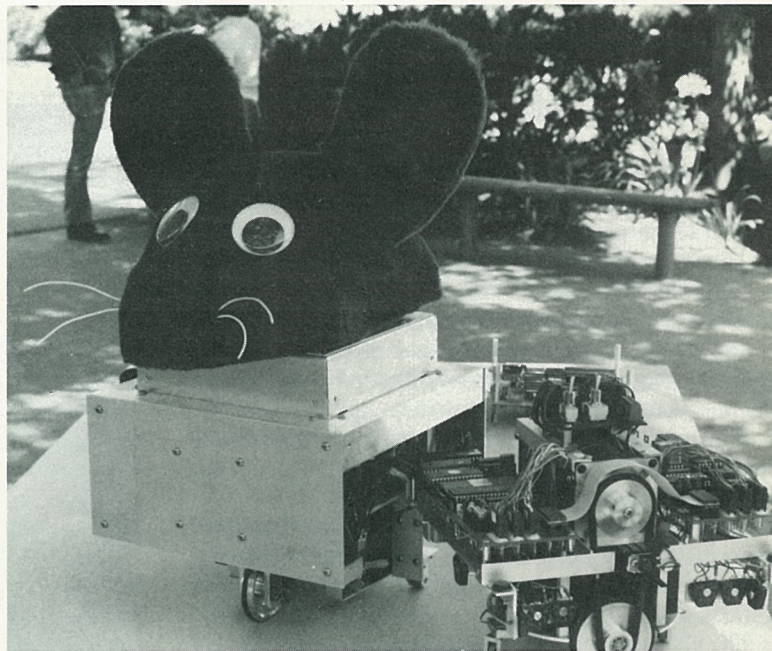
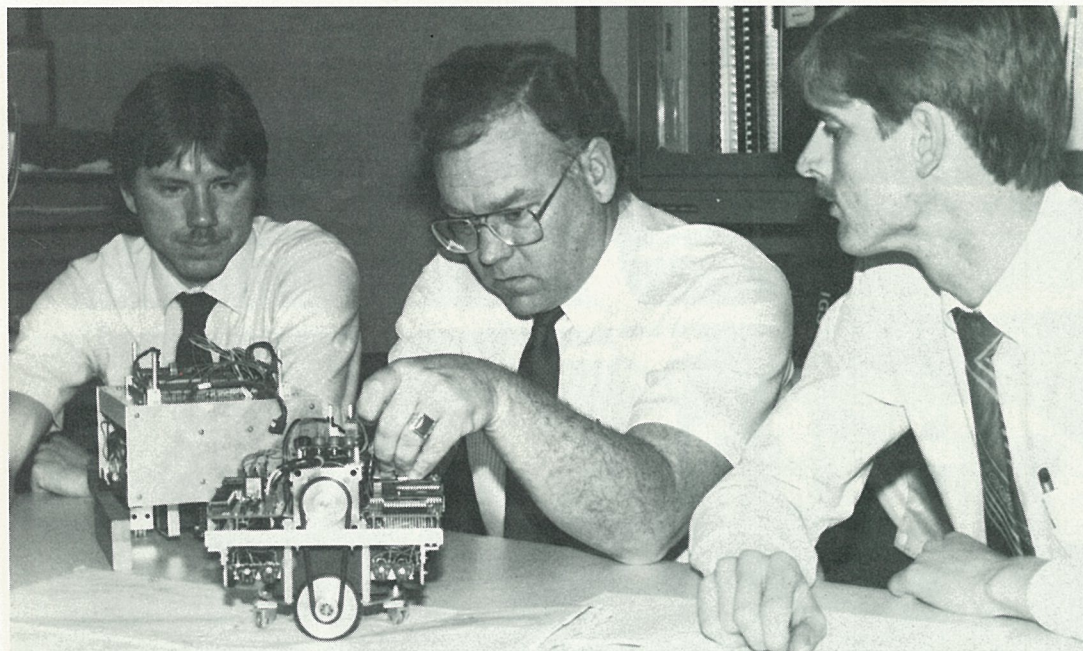
He said the progress made with the effort so far takes on added significance, considering that "these kids are still learning to write, in some cases."

Plans are being made to expand the program to other Cub Scout dens and to possibly begin correspondence with Scouts in additional countries. "We want to do it on a larger scale, because we know it will work," said Robinson.

Robinson has worked at Fort Worth for six years. He formerly served on a city police force and has attended the Oklahoma University Police Academy and the North Central Texas Police Academy. He and his wife have two sons, ages 6 and 9.



Cub Scout Mail. Fort Worth security guard Doug Robinson and members of the Cub Scout group he leads discuss letters received from their counterparts in England. The British scouts also sent patches and miniature flags to their American friends.



Jon Lloyd, Carroll Hoagland and Dave Mabrey (left to right), employees at Fort Worth's F-111 support facility at McClellan AFB, Calif., work on two robotic devices, called "mice," designed to automatically traverse the crooks and turns of a maze. At right are two of the devices built previously by Hoagland. The one on the left, with the cover and mouse's head, is called "Fred." The uncovered device at the right is called "Hawk."

Engineers Have an Unusual Spare-Time Activity — Building a Mouse

The challenge of building a better mousetrap is considered the ultimate test of inventive success, but three employees at Fort Worth's F-111 support facility at McClellan AFB, Calif., have been spending a lot of their spare time trying to build a better mouse.

Engineers Carroll Hoagland, David Mabrey and Jon Lloyd are not dabbling in genetics or supernutrients, and the mouse they are creating would hold no epicurean interest for a self-respecting cat. Furthermore, their type of mouse has nothing to do with moving a cursor or drawing lines on a computer display.

Their mouse is a MicroMouse, a self-contained device that guides itself with infrared sensors as it wends its way through a maze under microprocessor control. The mouse is Hoagland's third, and he hopes it will distinguish itself with some fancy scurrying next month in the 1986 U.S. MicroMouse Contest, which is being held in conjunction with the Institute of Electrical and Electronic Engineers' (IEEE) 1986 Microprocessor Forum in Atlantic City, N.J.

Hoagland built his earlier mice in undergraduate student projects at California State University at Sacramento, which Mabrey and Lloyd also attended and where all

three are currently enrolled in graduate studies. Hoagland's first MicroMouse won an IEEE regional contest in northern California.

Mabrey and Lloyd are assisting him in the current effort.

"MicroMouse building is basically an exercise in robotic control," Hoagland said. "The key is the software, which is much more difficult to perfect than the hardware."

He estimates he has spent about 1,000 hours in software development for the three mice to date and about 500 hours building the hardware. Each mouse has cost approximately \$500 in materials.

Contest rules specify some of the dimensions for the mice. The entry the Sacramento engineers are building has a base that is approximately 5 inches long, and its upper part consists of a 6.5-inch by 7.5-inch circuit board. The infrared sensors are installed in two parallel ports in the lower part. MicroMice bear no resemblance to real rodents, although Hoagland said he fitted one he built with the likeness of a rat's head.

The maze the mouse must pass through is composed of 256 7-inch squares arranged in 16 rows of 16. The squares

have 2-inch high, movable walls which are set up so that the mouse will have to negotiate 30 turns and cover 45 linear feet as it makes its way through. The upper part of the mouse extends over the walls.

The walls are reconfigured before the robot mouse's first run so that it cannot benefit from memory. After the first trip through, the mouse is allowed to make several additional attempts, using memory data obtained on the initial voyage. The operator is not allowed to feed additional data to the mouse. The mouse's best time is entered in the contest.

Hoagland hopes the new mouse's best maze time will be less than two minutes. If it wins in Atlantic City, the mouse can be entered in an international competition in Tokyo.

Japan is the world leader in MicroMouse building, and some gyroscope-equipped Japanese MicroMice have covered the contest maze in less than 20 seconds, according to Hoagland. "We're planning to put gyros in our next, fourth-generation, mouse so that we'll be able to compete on that level," he said.

Department of Defense Announces an Increase in the Purchase of F-16s

The Department of Defense has announced that it will increase by 252 the number of F-16 Fighting Falcons that will be purchased for the U.S. Air Force between fiscal year 1987 through fiscal year 1994.

"The U.S. Air Force plans a total buy of 3,047 F-16s through FY 94 to replace aging F-4s and to modernize the Air Reserve Forces," said Russel Rourke, Secretary of the Air Force, in explaining the DOD's budget request for FY 87 that was presented to Congress Feb. 5th by Defense Secretary Caspar W. Weinberger.

Earlier figures released by USAF for acquisition planning called for 2,795 F-16 aircraft.

The lengthy document, which must be approved by Congress, calls for the production of 216 F-16s annually between Oct. 1, 1986, through Sept. 30, 1993. During FY 86, which began Oct. 1, 1985, 180 F-16C/D aircraft are to be delivered to USAF.

Weinberger, in his budget request, said USAF would in FY 88 and later years begin receiving modified F-16s along with the advanced F-16C/D models. During each of the six fiscal years, he said, 96 of the aircraft delivered would be C/D models while 120 annually would be the modified configuration, which he called the F-16CM.

Full details on how the less costly F-16CM would differ from the current F-16C/D were not spelled out in the budget request documents. A fact sheet issued by USAF after the modified version was announced said:

"The 'modified configuration' F-16 referred to in the Secretary of Defense Annual Report to Congress should not be interpreted as a departure from long-standing Air Force practice of matching aircraft configuration to specific mission requirements.

"Specific configuration is being developed by the tactical air forces. An example of configuration matching for block 40/50 would be to equip them with the APG-66 radar in place of the more capable but more expensive APG-68. They could be LANTIRN (Low Altitude Navigation and Targeting Infrared system) capable and would be assigned to air-to-ground LANTIRN units and other units where the full air-to-air capability of the APG-68 is not required. They will be AMRAAM capable and will be equipped for GPS (Global Positioning System) as required for all Air Force aircraft. Additional equipment may be substituted/deleted from these block 30 aircraft as well, where operationally practical as a cost-saving measure.

"Cost savings resulting from the configuration matching along with the decision to allocate more resources to air-

craft procurement, permit the Air Force to program procurement of 216 F-16C/Ds in FY 87. These measures will enable us to reach the fighter production rates necessary to meet required force structure needs."

The budget request cites the mission of the F-16 as "being configured as a lightweight, high performance, multipurpose fighter capable of performing credibly over a broad spectrum of tactical air warfare tasks at affordable cost."

The budget request notes that the F-16C/D aircraft have "a reconfigured cockpit, improved radar and increased computer capacity. These improvements will facilitate the incorporation and employment of advanced subsystems, including AMRAAM (Advanced Medium Range Air-to-Air Missile), LANTIRN and ASPJ (Airborne Self Protection Jammer). . . .

"In FY 87, the Air Force is requesting \$3.494 billion for the procurement of 216 aircraft plus initial spares in the second year of a four-year multiyear procurement. This is a follow-on to the original F-16 multiyear procurement that spanned FY 82 - 86 and saved \$257 million. The follow-on multiyear program FY 86 - 89 was approved in FY 85. This multiyear program is projected to save \$358 million."

F-16 Proves Its Maturity as Worldwide Fleet Flies One Million Hours

The F-16 Fighting Falcon fleet recently surpassed one million flight hours in operations with the United States Air Force and eight allied air forces throughout most of the Free World.

This major milestone in the program was achieved seven years after the first F-16 operational unit was activated at Hill AFB, Utah, in January 1979.

More than 1,400 F-16 aircraft, flying out of 28 bases, compiled the million-hour flight total, a mark that traditionally means the aircraft has reached its maturity.

Totals to date show about 734,000 flight hours for the USAF, approximately 247,000 for the allied air forces and

another 19,000 logged by preproduction aircraft and during testing.

It is projected that the USAF will reach the million-hour flight mark near the end of this year.

Since becoming operational, the F-16 has consistently met or exceeded design specifications, as shown by its performance in exercises, competitions and in combat. It continues to establish new standards of excellence for a multi-mission fighter for all criteria: reliability, maintainability, readiness, sortie surge rates and safety. Additionally, the F-16 has been the safest single-engine fighter and the safest multi-mission fighter in USAF history.

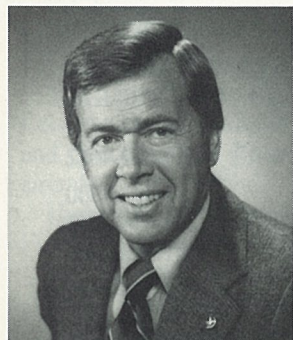
More than 150 pilots have exceeded 1,000 flying hours in the F-16, and Lt. Col. Sergio Del Hoyo, USAF, recently became the first F-16 pilot to reach 2,000 flight hours. He was later joined by Lt. Col. Larry Stellmon, who, until earlier this month, was Commander and leader of the U.S. Air Force Aerial Demonstration Squadron, the "Thunderbirds."

The high readiness and utilization rates and the high average flight time per mission have contributed to many F-16 pilots achieving extensive experience levels in the aircraft.

Cessna and Chairman Meyer Win Prestigious Collier Trophy for 1985

Cessna Aircraft Company and its Chairman, Russell Meyer, have been named to receive the Robert J. Collier Trophy for 1985.

The Collier Trophy is presented annually by the National Aeronautic Association to an individual or company for "the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, or safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year."



Cessna and Meyer were nominated for the Collier Trophy by Frederick W. Smith, Chairman and Chief Executive Officer of Federal Express Corporation, for the safety record in 1985 of the worldwide fleet of almost 1,400 Cessna Citation business

jet aircraft. Smith's company has operated several Citations, and his nomination was seconded by several other aviation industry leaders.

In 1985, for the second successive year, no passenger fatalities were recorded during nearly 750,000 flight hours by Citations in more than 40 countries.

Only four Citation accidents involving passenger fatalities have occurred in the United States in the 14 years and 3.5 million flight hours since the Citation was introduced. The worldwide Citation fleet logs more than 2,000 flying hours per day, or the equivalent of 33 trips around the world. A Citation fanjet takes off on a business flight every 44 seconds, every day of the year.

Meyer said it is especially gratifying to be the first general aviation recipient of the Collier Trophy since the first one was awarded to Glenn H. Curtiss for development of the hydro-aeroplane in 1911.

"It is a great honor to be named the recipient of the Collier Trophy for 1985," Meyer said. "The Citation program has been a team effort from its inception, and safety

is the highest priority in the design of every model. Everyone associated with the Citation — employees, suppliers and customers — should be justifiably proud of its unparalleled operating record."

"The American public has probably never been more aware of the importance of aviation safety, and we are especially pleased that the Collier Trophy was awarded to Cessna for the outstanding safety record of the worldwide fleet of Citations," Meyer said.

The Robert J. Collier Trophy will be presented at a dinner sponsored by the National Aviation Club in Washington, D.C. The Trophy is on permanent display in the Milestones of Flight Hall at the National Air and Space Museum of the Smithsonian Institution in Washington.

In 1976, General Dynamics Chairman David S. Lewis and the USAF Industry team which produced the F-16 were presented with the Collier Trophy "For the greatest achievement in aeronautics or astronautics in America" in 1975.

Lovelace to Congress: U.S. Needs a Fleet Of Diversified ELVs

If the United States is to meet its current commitments in space, it is absolutely essential that it procure a diversified fleet of expendable launch vehicles (ELVs), according to Dr. Alan M. Lovelace, Vice President and General Manager of the Space Systems Division.

That strategy, Lovelace said, would address the long-term objectives of assuring this country's access to space and of maintaining the industrial base needed to continue that assured access beyond the near-term.

Lovelace made his remarks during an appearance before the Subcommittee on Space Science and Applications of the House Committee on Science and Technology in Washington, D.C., on Mar. 6th.

He had been invited to give the views of General Dynamics regarding the replacing of lost launch capacity since the loss of the Space Shuttle *Challenger*. The committee also sought information on the purchase of expendable launch vehicles and on the time required to build and launch Atlases and Atlas/Centaurs.

Lovelace told the congressmen that it was apparent to Space Systems even before the *Challenger* accident that there would be a national space launch capacity problem, "and that it was our goal to offer constructive alternatives to help diminish this problem."

He added that, after the Shuttle tragedy, General Dynamics undertook its own independent study to determine the effect of the loss on the United States space program.

"The first significant result of our analysis indicates the Shuttle launch capacity is more sensitive to the lowered Shuttle flight rate than to the length of the time the fleet is grounded," Lovelace said. In other words, it makes less difference that the Shuttle is down 6, 12 or 18 months than that the flight rate has been reduced by either fewer orbiters or lower launch rates, or both, he said.

Lovelace said the General Dynamics study indicated three things:

- The dislocation of the 1986-1989 Shuttle schedule is severe enough to suggest that the majority of missions which now can be flown by the Shuttle will be limited to those that can only be flown on the Shuttle.
- A large percentage of the displaced Department of Defense or communication satellite missions that are not "Shuttle-unique" cannot be accommodated in the 1986-1989 time period.

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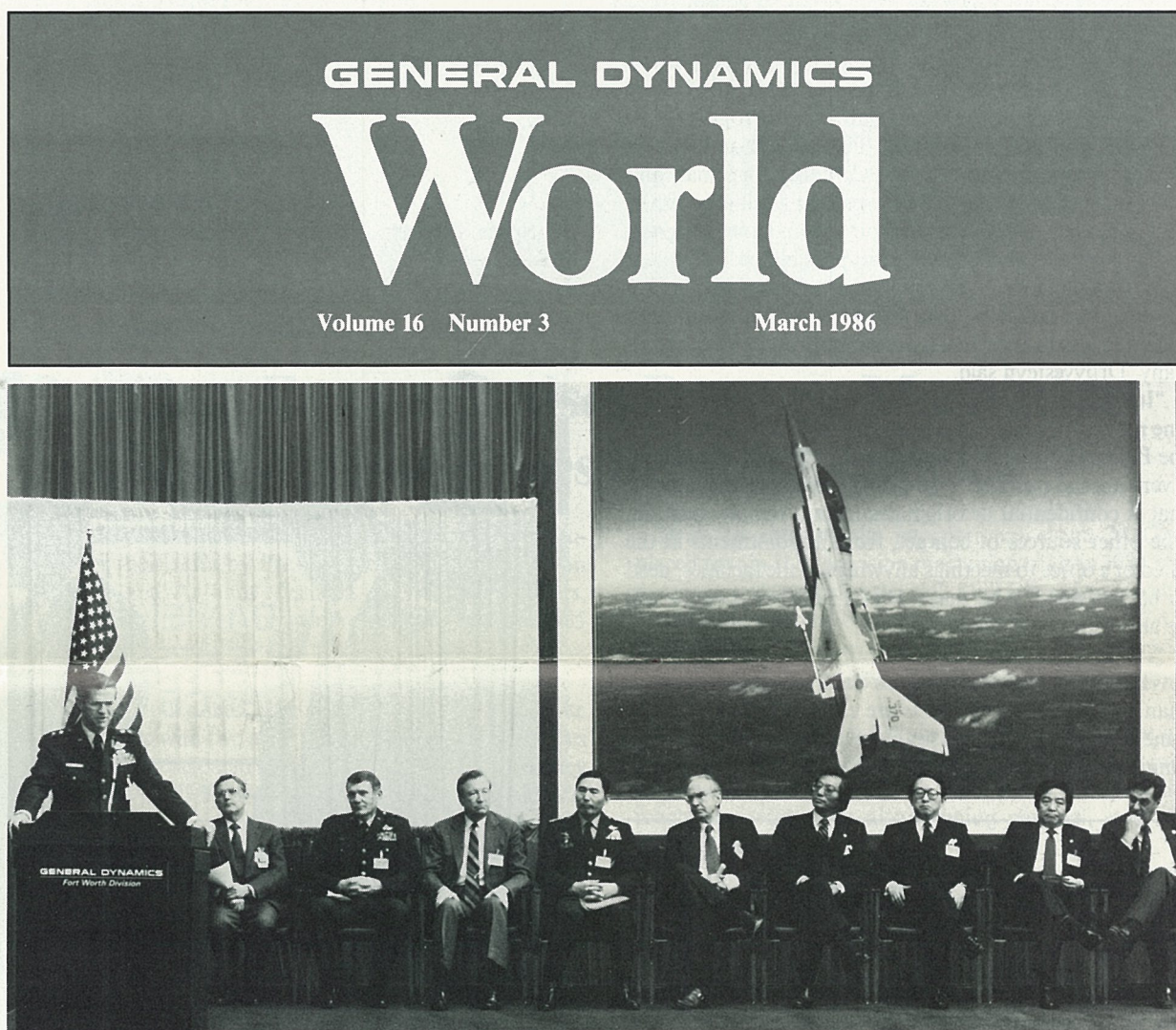
More F-16Ns Ordered

The U.S. Navy has exercised its option to purchase 12 additional F-16N aircraft from Fort Worth. With the 14 aircraft that it ordered previously, the Navy will now receive a total of 26 F-16Ns.

The aircraft will be used to fly against other Navy fighters in dissimilar air combat training. The 12 aircraft in the new order will be based at Key West Naval Air Station, Fla., with fighter squadron VF-45.

The aircraft in the initial order will be based at Miramar Naval Air Station, Calif., with the Naval Fighter Weapons School and fighter squadron VF-126.

Of the 26 adversary aircraft, 22 will be single-seat and four will be two-seat versions, designated TF-16N.



Delivery Ceremony. U.S. Air Force Maj. Gen. Michael Carns speaks at the Fort Worth delivery ceremony for the first F-16 produced for the Republic of Korea Air Force. Seated behind him (left to right) are: Herbert F. Rogers, Vice President and Fort Worth General Manager; USAF Maj. Gen. Ronald Yates; Stanley C. Pace, General Dynamics Chairman and Chief Executive Officer; ROKAF Lt. Gen. Suh, Dong-Yull, Vice Chief of Staff; U.S. Congressman Jim Wright of Texas; Congressman Pong, Du Wan of the Republic of Korea Assembly; Ambassador Kim, Kyung-Won, Ambassador to the United States; Congressman Park, Jong Ryul of the Republic of Korea Assembly, and U.S. Congressman Richard K. Arney of Texas. The Republic of Korea Air Force will receive F-16C and F-16D aircraft.

Republic of Korea Becomes 1st Allied Nation To Receive F-16D Multimission Fighter

The Republic of Korea Air Force recently took delivery of its first F-16D multimission fighter in ceremonies at Fort Worth, marking the first time that the advanced version of the F-16 has gone to an allied nation.

The dual-seat F-16D was accepted by Lt. Gen. Suh, Dong-Yull, Vice Chief of Staff, Republic of Korea Air Force. Single-seat F-16C aircraft are to be delivered later.

The U.S. Air Force began receiving F-16C/D aircraft in 1984.

The initial F-16D, with others following off the production line, will be flown to the Republic of Korea, where the USAF also operates a wing of F-16s.

"Today is a memorable day for all Koreans," General Suh said during the ceremony. "At the outset of the Korean War back in 1950, we had only a few, primitive T-6 light trainer aircraft. Today we are here to receive the world's most prestigious tactical fighter, the F-16 Fighting Falcon . . . truly the most capable fighter of this generation."

"The combat capabilities of the F-16 aircraft will play an important role in deterring communist North Korea," General Suh said. "The acquisition of F-16 fighters by the

Republic of Korea Air Force will enable us to better contribute to the maintenance of peace and stability in the Far East, and especially on the Korean peninsula."

Maj. Gen. Michael Carns, Deputy Chief of Staff for Operations and Intelligence for the Pacific Air Forces, speaking on behalf of the USAF, noted that the Republic of Korea Air Force's acquisition of F-16C/D aircraft marks the first introduction of advanced Fighting Falcons to the Pacific, since it precedes the scheduled basing of USAF F-16C/Ds at Kunsan Air Base, South Korea.

"We in the Pacific Air Forces welcome this delivery to the Republic of Korea," General Carns said. "It helps to forge new links between our (nations') air forces." General Carns also highlighted the advantages of interoperability and commonality that will result from both countries using the same aircraft in the region.

House Majority Leader Jim Wright of Texas, representing the U.S. Congress at the ceremony along with Congressman Richard K. Arney of Texas, reaffirmed the United States' defensive partnership with the Republic of

(Continued on Page 3)

Full-time Directors For Ethics Program Will Be Appointed

During the course of 1986, General Dynamics will appoint full-time Ethics Program Directors at major locations of its aerospace, electronics, submarine and land systems operations, replacing most of the current appointees who have served as part-time directors on an added task basis since August of 1985.

"The divisions had given us some of their most competent people on a shared basis for these positions until we were able to go into the full-time program," said Kent Druyvesteyn, Corporate Ethics Program Director. "The transition to full-time Ethics Program Directors should be complete and fully implemented by Dec. 1, 1986."

Druyvesteyn said the current Ethics Program Directors are playing an important role in the comprehensive program now under way to communicate awareness and understanding of ethical issues throughout the company.

"The appointment of full-time directors will underscore our commitment to increase this process of communication," Druyvesteyn said. "It will allow each director to be out and about even more to listen and talk to people and to serve as a source of information and as an advisor."

"The key to the success of our Ethics Program is in getting it implemented with all 100,000 men and women of the company," said Stanley C. Pace, Chairman and Chief Executive Officer. "The presence of a full-time Ethics Program Director at each division will make the program as visible and as available as it can possibly be."

The traffic on the ethics hot lines, established in January of 1986, has indicated that greater communication with Ethics Program Directors is desirable throughout the company, Druyvesteyn said.

"It's important to point out that the hot lines are only one means by which employees can maintain contact with the Ethics Program Director," he said. "The hot lines have a very special purpose — to provide access to the director that is confidential or originates from a remote location. The other sources of contact, from appointments in the director's office to meetings anywhere in the facilities, need to be cultivated. And that's what a full-time director will be able to provide."

A slate of recommended appointments is scheduled for review by the Corporate Ethics Steering Group no later than May 1st. Appointments are expected to be made by June 15th, with the transition to full-time directors beginning no later than July 1st.

Second Air Guard F-16 Base Activated At Tucson, Ariz.

The Arizona Air National Guard's 162nd Tactical Fighter Group was officially activated with the F-16 in a recent ceremony at the unit's base at Tucson International Airport.

With the activation, Tuscon becomes the 29th F-16 site worldwide and the second Air National Guard unit to receive the Fighting Falcon.

The ceremony was highlighted by a flyby of old and new aircraft as one of the F-16s made a pass of the airport, followed by four A-7s. The unit's F-16 squadron, the 148th Tactical Fighter Training Squadron, joins two A-7 training squadrons in the 162nd TFG.

Col. Glen Van Dyke, 162nd TFG Commander, was master of ceremonies. Among dignitaries present was Maj. Gen. Donald L. Owens, Adjutant General of the Arizona Air National Guard.

General Dynamics was represented at the event by Theodore S. Webb, Fort Worth Vice President-F-16 Programs.

GENERAL DYNAMICS

World

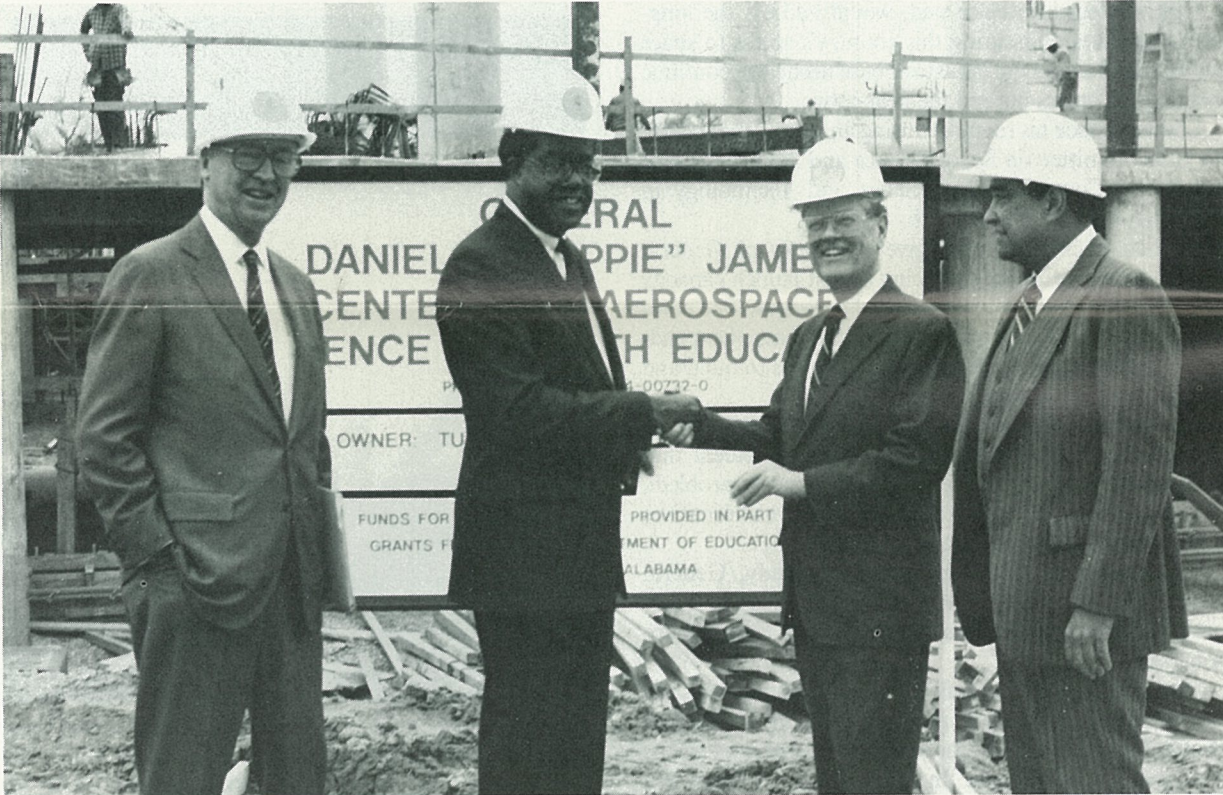
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Division Contributors: Edie Boudreau, Charles Brown, Jack Isabel, Jerry Littman, Evelyn Murphy, Jack Price, Jim Reyburn, Bill Sheil, Joe Stout, Bob Sweeney, Z. Joe Thornton

General Dynamics Ethics Program Hot Lines

Division/Subsidiary	City Location	Ethics Program Director	Phone Number
Nationwide	St. Louis	Kent Druyvesteyn	800-433-8442
Convair	San Diego	John C. Barrons	619-573-8120
Corporate Office	St. Louis	Kent Druyvesteyn	314-889-8456
	Washington	Leland B. Bishop II	703-553-1343
DatagraphiX	San Diego	Edgar L. Campbell	619-283-3760
Data Systems	St. Louis	William E. Tucker	314-851-8906
	Fort Worth	Robert B. Gardner	817-737-1682
	Norwich	James M. Cleary	203-823-2700
	San Diego	Roger E. Barnes	619-547-4682
Electric Boat	Groton	William A. Miller	203-441-8000
	Avenel, N.J.	Robert L. Wylie	201-636-0155
	Quonset Point	Roland J. Plante	401-268-2705
Electronics	San Diego	Jack D. Paige	619-573-7384
Fort Worth	Fort Worth	Jerry A. Sills	817-777-1400
	Abilene	Jon A. Cohen	915-691-2131
Freeman United	Chicago	James T. Ryan	312-263-3933
General Dynamics Services	St. Louis	Lewis A. Corwin	314-851-8997
Land Systems	Detroit/Troy	Charles J. Stieber	313-583-5888
	Lima	Walter W. Opanowicz	419-226-4540
	Scranton	Robert E. Dine	717-876-5797
Marblehead	Chicago	Edward K. Wilverding	312-263-3931
Material Service			
Pomona	Pomona	Jess W. Bathke	714-868-2001
	Camden	Ted C. Bernard	501-574-4446
Quincy	Quincy	Carter W. Eltzroth Jr.	617-773-6630
Space Systems	San Diego	Bernie A. Kulchin	619-573-8367
Valley Systems	Rancho Cucamonga	Donald D. Skinner	714-945-7772



Presentation Made. General Dynamics President Oliver C. Boileau (third from left) presents a \$100,000 check to Tuskegee University President Benjamin F. Payton on the site of the engineering building going up on the university's campus. On hand were John P. Maguire, Corporate Vice President & Secretary (far left), and Dr. Vascar Harris, Dean of the School of Engineering and Architecture (far right).

General Dynamics Pledges a Gift of \$500,000 To Tuskegee Univ. Aerospace Science Project

General Dynamics, with the pledge of a gift of \$500,000, has joined the U.S. Government, the State of Alabama and other firms in private industry in support of the General Daniel "Chappie" James Aerospace Science project being built at Tuskegee University.

General Dynamics President Oliver C. Boileau recently presented a check for \$100,000 to Benjamin F. Payton, Tuskegee University President, as the first increment of the gift, and the balance will be given to the university over the next five years.

During the presentation, Boileau lauded Tuskegee's success in training minority engineers, an accomplishment he called "a major contribution to the industry."

The university's aerospace engineering program, which now enrolls about 70 students, is the only one of its kind at a historically black institution in the country. Tuskegee also is noted for the high quality of the minority pilots it produced under the Civilian Pilot Training program in World War II. One of these was General James, who later rose to four-star general in the U.S. Air Force, for whom the building under construction is named.

John P. Maguire, Corporate Vice President & Secretary, who accompanied Boileau to Tuskegee, Ala., for the presentation and a tour of the construction site, said the gift was one of the largest made by the company to an institution of higher learning. Payton said the General Dynamics gift is topped only by the \$9 million Congress has invested in the Tuskegee project and the \$3.2 million capital outlay by the State of Alabama.

Tuskegee University offers degrees in electrical, chemical and mechanical engineering. The southeast Alabama university is third, after Prairie View A&M University in Texas and the Georgia Institute of Technology, in the graduation of minority engineers.

Payton called the General Dynamics gift "the kind of maximum effort" the university needs to help to sustain the fastest growing program at Tuskegee.

"Tuskegee University is not unaccustomed to pioneering," he said about the university's leadership in offering aerospace engineering. "But our bold moves must be undergirded with investors like General Dynamics, who match our capacity and willingness to address the evident and growing demands of high technology with adequate resources to meet the challenge."

Cessna Announces New "Unprecedented" Financing, Sales Plans

Cessna Aircraft Company has announced financing and special sales programs that company officials say are unprecedented in the general aviation industry.

The limited-time offer applies to U.S. purchases of Cessna's Conquest propjets, all twin-engine piston models and Centurion and Pressurized Centurion single-engine aircraft.

Highlights of the program, offered through Cessna Finance Corporation, include:

- No interest charged through Dec. 31, 1986
- A 4.9 percent interest rate through all of 1987
- Interest at prime rate through 1988
- Floating prime rate plus 2 percent for the balance of the loan term
- No penalty for prepayment of loan

An aircraft can be financed for a term of up to 10 years, and the contract can be written for up to 90 percent of the suggested list price.

Purchasers of piston aircraft will have the option of receiving substantial cash rebates ranging from \$20,000 to \$100,000 if they decide not to take advantage of the financing program.

All new aircraft sold under the financing program will carry full original warranties, regardless of the aircraft's model year or demonstration flight time that may have been recorded.

In addition, if Congress passes tax reform legislation that eliminates investment tax credits before the end of 1986, Cessna will pay a customer up to 5 percent of the sales price of his aircraft to compensate for removal of the investment tax credits.

If an owner wants to trade his aircraft for a Cessna Conquest propjet or Citation fanjet anytime within three to five years after an aircraft is purchased and financed with Cessna Finance Corporation under the plan, Cessna will not only guarantee the principal amount remaining on his original aircraft but will also add a 15 percent bonus.

In announcing the finance/rebate program to Cessna dealers, Richard Schwebel, Vice President of Propeller Aircraft Marketing, called the plan "the most innovative, aggressive, comprehensive sales program Cessna has ever introduced." Schwebel said the program applies only to aircraft purchased during the limited time period from a relatively small inventory.

Merger Completed

General Dynamics announced March 3rd that the merger of the Cessna Aircraft Company has been completed. General Dynamics owned over 95 percent of Cessna's outstanding common stock immediately prior to the merger.

Savings and Stock Investment Values		
	Cumulative Annual Rate of Return from Nov. 30, 1984 to Nov. 30, 1985	
	Salaried	Hourly *
Fixed Income	12.5%	12.4%
Diversified Portfolio	33.5%	33.1%
Government Bonds	15.0%	15.0%
	Closing Stock Price as of	
	Nov. 30, 1985	Nov. 30, 1984
General Dynamics Common Stock	\$68.375	\$65.88
* Annualized percentage based upon first five months of Fund's performance, July 1985 through November 1985.		

	Cumulative Annual Rate of Return from Dec. 31, 1984 to Dec. 31, 1985	
	Salaried	Hourly *
Fixed Income	12.3%	12.3%
Diversified Portfolio	35.6%	35.4%
Government Bonds	15.3%	15.4%
	Closing Stock Price as of	
	Dec. 31, 1985	Dec. 31, 1984
General Dynamics Common Stock	\$68.75	\$69.50
* Annualized percentage based upon first six months of Fund's performance, July 1985 through December 1985.		



President Ronald Reagan and Pomona's Aaron McGinty in the White House

President Reagan Praises Pomona Machinists For Their Performances in Skill Olympics

Two Pomona machinists have been personally congratulated for their skills by President Ronald Reagan. Aaron McGinty and Anthony Dechellis, tool and die makers, were praised for their high scores at the October 1985 International Youth Skill Olympics sponsored by the Vocational Industrial Clubs of America (VICA).

The two young men were guests of honor at the White House, along with five other members of the United States team that participated in the international event. They also met with U.S. Secretary of Labor William Brock, Secretary of Education William Bennett and members of Congress.

The seven were from a team of 14 of the nation's top vocational students who challenged student craftsmen and women from 17 nations in a test of their vocational skills at Osaka, Japan.

McGinty placed sixth in the machine turning event, and Dechellis placed fourth in the milling category.

Dechellis took the highest place ever for an American at an International Skill Olympics.

Prior to entering the international event, McGinty placed first in U.S. precision machining trials in 1984 after winning a gold medal at the U.S. Skill Olympics, as well as at state and regional competitions sponsored by VICA.

Dechellis placed second at the 1984 U.S. precision machining trials and also scored high marks in regional and state events.

Also participating in October's international event was Pomona's John Mihovetz, who placed ninth in the press tool-making contest. He took third in the U.S. precision machining trials after also winning regional, state and national contests.

The International Youth Skill Olympics was organized in Spain in 1950. Representatives of 18 Free World countries participate in various trade, industrial, technical and health events.

VICA is the national organization sponsoring American students interested in these competitions. It has a membership of more than 300,000 students in high schools, vocational schools and community colleges, and is supported by American schools, businesses and labor.

Republic of Korea Becomes 1st Allied Nation To Receive F-16D Multimission Fighter

(Continued from Page 1)

Korea, saying, "Let us with the ceremony here today give expression to our absolute determination that the flowers of freedom and political liberty and friendship between our countries . . . may continue to blossom and flourish forever in the fertile soil of the Korean peninsula."

"I have come today . . . to extend a salute to the men and women of General Dynamics for the magnificent manner in which, over the past seven-and-a-half years, you have produced such an outstanding aircraft as the F-16," Congressman Wright added.

Congressman Armeley also praised the South Korean defense initiative and the success of the F-16 production program. "It's a pleasure for me to see our allies employing this kind of hardware, developed by American engineering, produced by the fine craftsmen in American corporations, and to take that knowledge back to make their economy stronger and their defense system stronger," he said.

Ambassador Kim, Kyung-Won, Ambassador of the Republic of Korea to the United States, said the F-16s being supplied to the country "will go a long way to enhance the security (of the Republic of Korea) and also help preserve the precarious peace that exists on the Korean peninsula."

"We (South Koreans) face a very serious military threat

from the North Korean communists, and we do not see any prospect in the immediate, foreseeable future of the North Koreans changing their strategy," the Ambassador said.

Stanley C. Pace, General Dynamics Chairman and Chief Executive Officer, called the F-16D delivery "an exciting and at the same time gratifying moment for the people of General Dynamics."

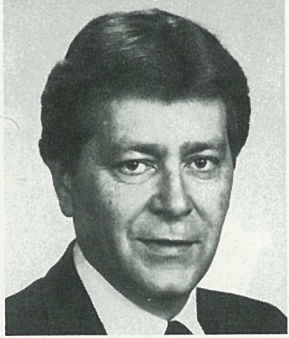
"Over the past 10 years, General Dynamics has had the pleasure and the privilege to work with the Republic of Korea both as a customer and a supplier," Pace said. Working with that country on the F-16 program "has enabled our company and our employees to become acquainted with the talented South Korean people and organizations which are building one of the strongest economies in the Far East," he said.

F-16 aircraft entered operational service in January 1979 and have logged more than a million flying hours with the U.S. Air Force and the air forces of Belgium, Denmark, the Netherlands, Norway, Egypt, Israel, Pakistan and Venezuela. Other nations that have ordered the F-16 are Turkey, Greece, Singapore and Thailand.

The F-16 is a compact, highly maneuverable, single-engine multimission fighter. More than 1,500 F-16 aircraft have been delivered and are being flown from 29 bases throughout the Free World.

Wickersham Is Appointed Division Vice President Of Human Resources

John J. Wickersham has been promoted to Division Vice President-Human Resources at the Electronics Division.



Wickersham

more than 18 years.

Wickersham majored in electrical engineering at Widener University, Chester, Pa., and has taken additional course work in advanced management at the University of Chicago.

Wickersham, 43, joined General Dynamics from Boeing Computer Services in 1980 as Manager of Industrial Relations for the Data Systems Division. He was Director of Industrial Relations for that division when he was named to the same post at Electronics Division in April 1985. He has served in Human Resources for

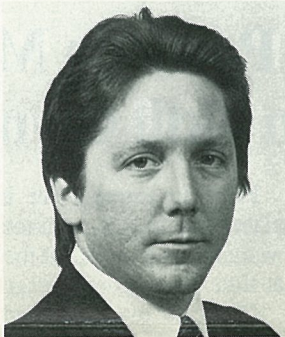
Gerald K. Poye Appointed GDLS Project Manager At Sterling Heights Complex

Gerald K. Poye has been named Project Manager for Land Systems' new Engineering and Administration complex being built in Sterling Heights, Mich.

Reporting directly to Robert W. Truxell, Vice President and GDLS General Manager, Poye is responsible for managing the planning, construction and implementation phases of the project.

He is also serving as liaison between Land Systems and the architectural engineer and general contractor.

Poye holds a Bachelor of Science degree in Architecture, magna cum laude, from Lawrence Institute of Technology, Southfield, Mich. He joined Land Systems in 1982 as a facilities planner and was assigned to the new complex in the latter part of 1984 as the project engineer.



Poye

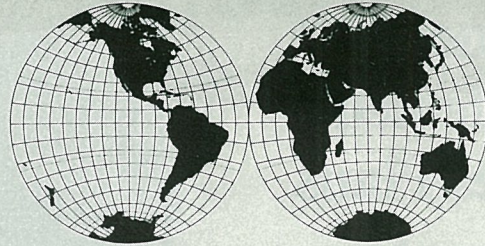
Electronic Publishing System Installed at Warren Center

Land Systems has installed a \$2 million electronic publishing system at the Warren Logistics Center.

Called the Advanced Microimage and Publication System, it reduces cost and improves efficiency of preparing documents for publication by giving a writer the electronic tools to create a finished page, complete with art, which is ready for publication.

The system provides a library of text and artwork that can be accessed and manipulated directly by writers operating from remote terminals.

Kim S. Tonkovich, Office Services Supervisor, who is in charge of the new system, said it will be used initially to assist in the publication of manuals and microfilm drawings created on computer-aided design terminals.



Around the World

CHQ: Marlene E. Carver was appointed to Corporate Director-International Administration . . . James D. Van Dusen joined as Auditor . . . Susan M. Bryant as Subcontract Auditor . . . Brian E. Zeger as Subcontract Auditor . . . Benjamin A. Haddad as Corporate Manager-Legislative Affairs & Associate Government Relations Counsel . . . Bradley B. Schmidt as Supervising Senior Auditor . . . Hemlata N. Weiss as Corporate Manager-Offset Tourism . . . Ardelle C. St. George transferred from Convair and was promoted to Corporate Purchasing Agent . . . John R. Lopez Jr. was promoted to Corporate International Staff Assistant & Manager-South America . . . Nancy Fronckewicz to Corporate Administrator-International Administration . . . John C. Palazzolo to Corporate Manager-Employee Benefits, SSIP and Government Reporting.

Fort Worth: Maurice J. Ahearne was promoted to Industrial Engineering Chief . . . Linda S. Ancy to Engineering Administrative Specialist . . . James M. Aslin and William M. White III to Production Specialist . . . Robert E. Atkson to Manufacturing Support Equipment Engineering Specialist . . . Wesley E. Box to Finance Chief . . . Wilma O. Brigman to Material Planning Supervisor . . . Delbert E. Briley Jr. to Tool Manufacturing General Foreman . . . Michael B. Busby to Program Specialist . . . Jerrell J. Carstarphen and Jerry D. Ponder to General Foreman . . . David R. Cocco to Field Service Engineer . . . John P. Cole to Quality Assurance Engineering Specialist . . . Terry Cook to Technical Group Supervisor . . . Marvin G. Fain to International CoProduction Chief . . . Nick P. Georges, Russell L. Gillilan and Martha J. Taylor to Material Supervisor . . . Murl J. Grandia and George H. Hayward Jr. to Engineering Program Manager . . . Johnny R. Griffin to Foreman . . . Donald G. Hammond to Engineering Chief . . . Larry M. Jackson to Tool Planning Supervisor . . . George H. McClain Jr. to Engineering Manager . . . O.B. Moberly Jr. to Production Management Specialist . . . Ronny O. Roberts to Quality Assurance Manager . . . Kevin Q. Shaver and William J. Wansing to Manufacturing Control Supervisor . . . Daryl D. Skelton to Manufacturing Engineering Chief . . . Patsy A. Waldrop to Senior Quality Control Engineer . . . David T. Wesolka to F-16 Programs Manager . . . Boyd E. Wren Jr. to Schedules Specialist.

Convair: David G. Stone was appointed to Contracts Director . . . Stephen N. Ashbarry and Robert J. Buehler were promoted to Configuration Management Supervisor . . . Robert J. Barry and Manuel Montijo to Manufacturing Operations General Supervisor . . . Emmett Capossere to Plant Services Operations General Supervisor . . . George E. Christensen to Tooling Supervisor . . . Thomas S. Crow to Industrial Relations Administrator . . . George D. Cunha, Mark R. Sunday and John X. Tsirimokos to Engineering Chief . . . David P. Filas and Thomas A. Maddry to Quality Assurance Group Engineer . . . William G. Foote to Quality Assurance Supervisor . . . Paul E. Huffman to Industrial Engineering Operations Supervisor . . . Nancy E. Jackson to Procurement Services Supervisor . . . Roy A. Keely, Richard W. Roberts and Richard R. Williams to Group Engineer . . . John A. Lambert Jr. to Industrial Engineering Chief . . . Barbara A. McDonald to ILS Administrative Chief . . . Ron J. Meier to Quality Assurance Supervisor . . . Jack L. Mocer to Configuration Management Chief . . . Michael F. Schweitzer to Quality Control Chief . . . John B. Seagrove to Logistics Supervisor . . . Charles T. Smith to Publications Manager . . . Richard C. Solomon to Master Scheduling Supervisor . . . James L. Warner Jr. to Product Support Chief.

Valley Systems: Jon E. Gunderson transferred from CHQ and was promoted to Accounting Chief . . . Patricia D. Alford was promoted to Master Scheduler . . . Sylvia E. Eickele to Manufacturing Analyst . . . Alicia A. Gary to Industrial Relations Administrator . . . David M. Reisman to Development/Training Administrator . . . Charles L. Shelton to Test Engineer . . . Betty J. Wango to Accounting Chief . . . Kevin R. Waszak to Chief Safety Engineer . . . Dennis M. Yee to Industrial Engineer . . . Billy C. Coleman to Employee Services Manager . . . Jo Ann G. Durrani to Compensation Administrator . . . Robert M. Fontaine to Program Administration Manager . . . Janet G. Hansen to Systems & Procedures Chief . . . Cathy A. Masters to Compensation Analyst . . . Billy J. Middleton to Estimating Chief . . . John R. Ogorzelec to Manufacturing Engineer . . . Kent R. Porter to Hourly Personnel Chief . . . Roman A. Vasquez to Compensation Manager . . . James M. Wiegman to Compensation Chief.

Pomona: Michael Oliveri was appointed to Manufacturing & Production Engineering Director . . . James L. Davis to Phalanx Program Development Marketing Director . . . Lowell D. Edwards to Manufacturing Material Control Director . . . John R. Smith to SPARROW Program Development Marketing Director . . . David R. Clauer was promoted to Project Representative . . . Clarence E. Olsen to Professional Staffing Manager . . . Edward L. Pierce to Designer . . . Nancy K. Roberts to Research Engineer . . . William G. Wagner to International Plans & Administration Manager . . . Marc Koenig and Mark A. Bencomo to Project Administrator . . . Barbara G. Chindlund and Edward D. Roesly to Production Control Supervisor . . . Judy A. DePuy to Safety, Health & Services Manager . . . Thomas G. Drake to Project Coordinator . . . Lawrence F. Freeland to Engineering Administration Manager . . . Anthony Gelsomino to Production Support Chief . . . Joe E. Hardesty to Estimating Manager . . . Debra L. Mahlow to Production Assurance Administration Manager . . . Warren K. Matsudka to Manufacturing Supervisor . . . Michael M. Maurer and Kenneth R. Swearingen to Procurement Administrator . . . Clifford R. Piequet to Manufacturing Control Manager . . . Henry S. Rekosiewicz and William B. Scott to Superintendent . . . Phyllis E. Shanefelt to Publications Group Supervisor . . . Steve M. Slayton to Security Manager . . . Velma L. Thomas to Salary Administration Chief . . . Lawrence A. Urig to Production Engineering Chief.

Electric Boat: William Miller was appointed to Ethics Program Director . . . Thomas Haggerty to Nuclear Test & Construction Director . . . Charles Blount, Randall Coleman and George Pina were promoted to Engineering Chief . . . Paul Bennett to Chief Test Engineer . . . David Hantman to Site Planning Chief . . . Paul Watrous to Site Industrial Relations Chief . . . John Thompson to Site Material Ord Services Chief . . . Donald Felicetti to Site Construction Superintendent . . . James Essery, Jeffrey Gateman and John Rodolico to Engineering Supervisor . . . Susan Sears to Design Services Supervisor . . . Wayne Ambrose to Plant Protection Lieutenant . . . Elizabeth Cameron, William Pepin and Lawrence Simon to Associate Engineer . . . Michael Ross to Foreman. At Quonset Point, Edward St. Amant to Trade Planning Supervisor . . . Michael Gravier to Group Trade Planner . . . Joseph Giorgio to Employee Relations Administrator.

Land Systems: Henry Macklin was promoted to Second Shift Operations Superintendent . . . Jerry I. Manastyrskiy to Assistant Program Management Chief . . . Timothy M. Chase to Program Management Representative . . . Richard A. Dunaway to Senior ILS Field Engineer . . . Joseph D. Klesko Jr. to Assistant Project Engineer . . . Norman J. LaPrise, Ronald D. Lyons and James D. Boismier to Engineering Supervisor . . . Joseph D. Kubina to Engineering Program Management Chief . . . Glen T. Milligan Jr. and Donald D. Babicz to Subcontract Administrator . . . Bert W. Farmilo to Quality Assurance Engineering Specialist . . . Raymond D. Dreher to Plant Engineering Chief . . . Garrison O. Gigg to Production/Material Control-Sterling Manager . . . Stephen Gottler to Program Control Specialist . . . Albert A. Eisele to Material Planning Supervisor . . . Bruce D. Weinber to Quality Assurance Chief . . . Tom P. Thomson to Estimating Manager . . . James H. Hill to Subcontract Administration Chief . . . Michael G. Sidebottom and David J. Eschenburg to Industrial Engineering Specialist . . . Mark P. Platt to Production Control-Sterling Manager . . . Thomas R. Luca to Program Management Specialist . . . Gerald W. Lis and Joseph G. Cymbalski to Program Control Administrator . . . John E. Hunley to ILS Field Engineer . . . Gene P. Manning to Logistics Engineering Supervisor . . . Gary C. McGregor to Industrial Engineering Manager . . . Henry Starostenko to Program Management Chief.

GDSC: David R. Briskey was promoted to Senior Manufacturing Engineer . . . Robert P. Bush to Domestic and International Marketing Manager . . . Frank S. Fowler to Aircraft Specialist . . . Lori A. Haberman-Wilson to Financial Analysis Manager . . . Rick Hundley to Business Development Manager . . . Edward S. Jones to Program Support Services Supervisor . . . Sarah C. Koppes to Marketing Administrator . . . Donnie L. Peters to Logistics Automation Manager . . . William A. Rummel to Sales Chief . . . Richard H. Seel to Product Manufacturing and Engineering Manager.

Data Systems: At Headquarters, Larry R. Feuerstein was appointed to Planning and Management Systems Director . . . G. Joe McCarthy was promoted to Management Systems Planning Manager . . . Greg J. Benken to Financial Analysis Manager . . . Ann Marie Connolly was transferred to Headquarters from Quincy and was promoted to Senior Administrative/Financial Analyst. At Western Center, Cliff L. Geisler was promoted to Business Systems Development Supervisor . . . Mary Jo Morris to Quality Assurance Manager . . . Russell H. Owen to CAD/CAM Chief. At Eastern Center, Floyd D. Romanik Jr. to Engineering Software Supervisor . . . James P. Winters to Engineering Software Chief.

Our Commitment To Society

- *We will act as responsible and responsive corporate citizens and in a moral, ethical and beneficial manner.*

(From the General Dynamics Standards of Business Ethics and Conduct.)

Air Force FB-111A Flies Lifesaving Mission for a Heart Transplant By Joe Stout

A Fort Worth-built FB-111A was used recently to deliver a heart removed from a donor in Oklahoma City to a recipient in Hartford, Conn., in time for a lifesaving transplant.

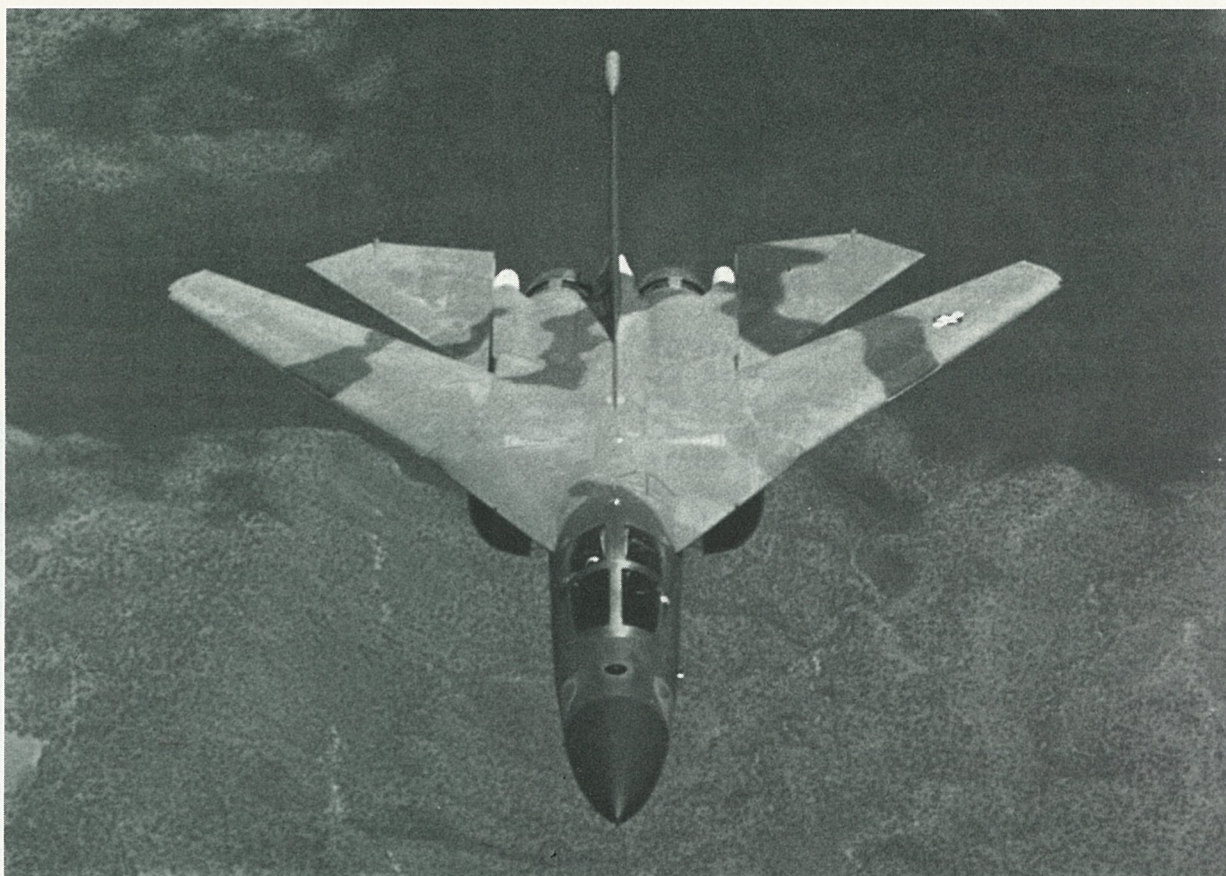
Doctors at Hartford Hospital called the U.S. Air Force after learning that the fastest available civilian aircraft would require at least three-and-a-half hours to make the trip. That would leave too little time for surgery, as heart tissue begins to deteriorate four hours after removal from the human body.

Two FB-111As and a KC-135 tanker from Pease AFB, N.H., were scheduled to fly a practice aerial refueling mission to Virginia the same night, so a change in destination was all that was required to make the delivery possible.

While an organ retrieval team flew from Hartford to Oklahoma in a chartered jet, the FB-111As from the 393rd Bombardment Squadron headed for Tinker AFB outside Oklahoma City. The midair refueling was accomplished on the way there so that the aircraft would be able to return as quickly as possible.

An ambulance raced to the base with the heart immediately after the retrieval team removed it from the donor and packed it in an insulated cooler. The FB-111As and their crews were waiting, and the cooler was handed to Capt. Steven J. Bruger, radar navigator for Capt. David R. Lefforge, commander of one of the aircraft. Captain Bruger held the container in his lap throughout the return flight because the heart had to be kept in a pressurized area and there was no other place for the container in the cockpit.

The aircraft landed at Bradley Air National Guard Base, Windsor Locks, Conn., after a flight of 1 hour, 55 minutes, in which the average speed was about 700 miles per hour. A helicopter picked the heart up at the base and delivered it to Hartford Hospital within 15 minutes.



Lifesaver. Fort Worth-built FB-111A, like the one from Pease AFB, N.H., which recently flew a lifesaving mission, is shown with its wings partially swept back. The aircraft's movable wings can be fully extended for takeoff and then fully swept back for high-speed flight.

The patient, Richard Reinhardt, 46, who had suffered heart damage from rheumatic fever, had already been in surgery for almost two hours. The procedure of placing the heart in his chest was started immediately by Dr.

Henry B. C. Low.

When the heart began beating in Reinhardt's chest, only three hours and 59 minutes had elapsed since it was removed from the donor.

Stretched Version of Cessna's Successful Caravan I Makes First Flight

Cessna Aircraft marked the first anniversary of its single-engine propjet Caravan I utility aircraft by making the first flight of a larger version.

The new aircraft, which is four feet longer than the original Caravan I, was designed for Federal Express Corporation, but will be offered for sale to other customers, along with the original model. Federal Express is currently operating 32 Caravan Is in its overnight delivery fleet.

The Memphis-based carrier will receive 77 more Caravans, 70 of which will be the new stretched version.

Federal Express also holds an option for 90 additional Caravan Is, which, if exercised, will bring the company's total fleet to 199 by 1990.

Seventy Caravan Is have entered service since the first one was delivered in February 1985. Eight are hauling cargo and passengers in Alaska, and others are operating in Europe, Africa, South America, Australia and New Zealand. The total fleet has flown about 22,000 hours, or about 4.5 million miles, in its first year.

The Federal Express Caravan Is are specially equipped for their role as overnight freight haulers, including a cargo

pod mounted under the fuselage.

Federal Express is flying its Caravan Is about 2,000 hours per month and reports a mechanical dispatch rate of 99.8 percent for the 32 aircraft currently in service. The big propjet package carriers are flown for Federal Express by four independent supplemental operators who are supported by a special Cessna product support group.

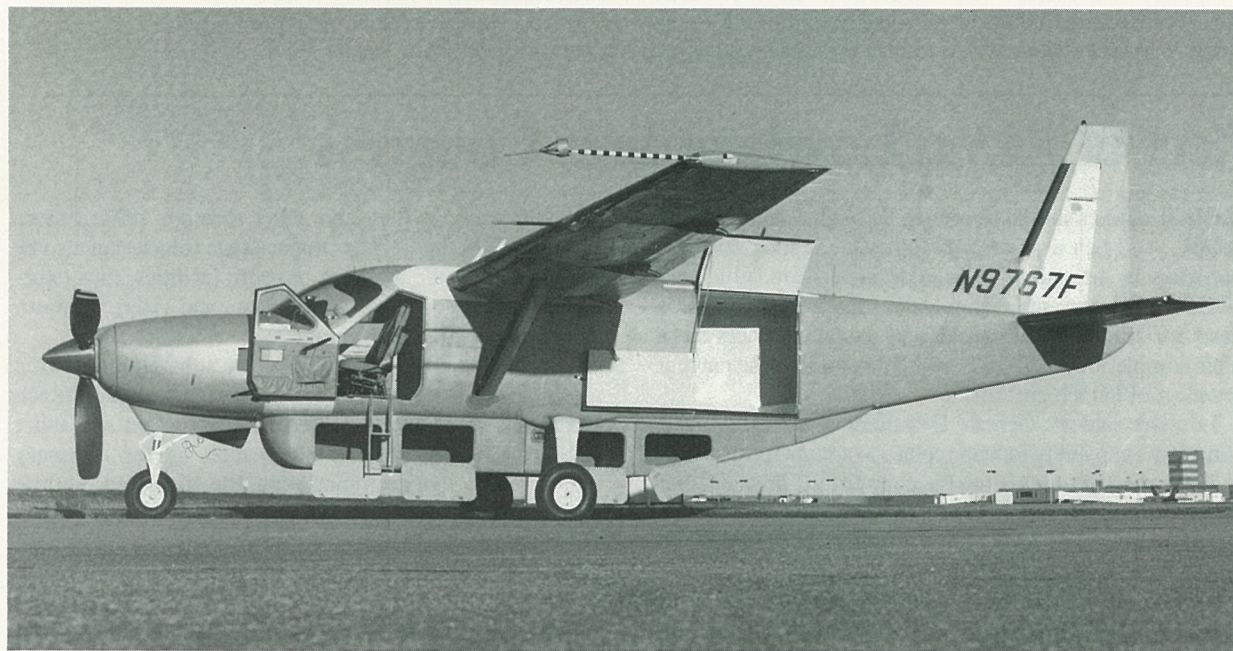
When the Caravan was first flown in late 1983, Cessna Chairman Russ Meyer said the company planned to deliver 1,000 of the unique cargo aircraft during the next decade. "The Caravan I should be the world's most widely used utility aircraft for the rest of this century," he said.

The new, larger version of the Caravan I made its first flight March 3rd. FAA certification is expected in October and deliveries to Federal Express will begin that month. The stretched aircraft will carry a payload of 3,500 pounds in 450 cubic feet of cargo space, including the cargo pod, compared to 3,000 pounds and 337 cubic feet in the original Federal Express model. The maximum useful load of 4,273 pounds is up from 3,777 pounds.

FAA certification of an amphibian version of the Caravan I is expected this month and delivery of the first aircraft equipped with amphibian floats will be made in April.

Cessna is developing a military version of the Caravan I, called the U-27A. This aircraft will be displayed at the Army Aviation Association of America Convention in April and will begin a tour of U.S. Army installations immediately following the convention.

The Caravan I is certified to carry a pilot and nine passengers. In some countries, regulations permit certification of a 14-seat version. The Caravan I is the largest single-engine propeller aircraft in production, and the only commercial single-engine propjet being built. Base price for the standard version is \$660,000.



New, Larger Version of Cessna Caravan I Showing Its Ample Cargo Space

Convair Awarded Contracts for Tomahawks and Launch Equipment

Convair received two major Tomahawk production contracts during February, representing the Fiscal Year 1986 buy of missiles and cruise missile launch equipment.

First, a \$124-million contract for production of Ground Launched Cruise Missile Transporter Erector Launchers (TEL) and Launch Control Centers (LCC) was announced on Feb. 19th.

Then, on Feb. 28th, a \$210-million contract for production of 206 Sea and Ground Launched Cruise Missiles was awarded, along with a \$3.3-million contract for recertification and depot maintenance support for already-delivered missiles. These production contracts were the

sixth production contract for TELs and LCCs and the seventh production contract for missiles awarded to Convair.

The missile production contract represented the full 60 percent of the annual buy available to Convair under the terms of the dual-source agreement between the DOD's Joint Cruise Missile Project Office, Convair and McDonnell Douglas. McDonnell had earlier been awarded 40 percent, or 138 missiles. Beginning next fiscal year, each company is guaranteed 30 percent with the balance of the order to be competed.

Three successful flight tests of Tomahawk have occurred

during January and February. On Jan. 9th, a Tomahawk was flown on a conventional land-attack mission after being launched from the Vertical Launch System aboard the USS *Norton Sound*.

On Feb. 15th, a land-attack missile was successfully launched from a Navy destroyer and flew a mission on the Eastern Test Range, finally overflying its target at Eglin AFB, Fla. The missile was recovered for future use.

A week later, on Feb. 21st, an antiship missile with an inert warhead was launched from a surface ship off the southern California coast and flew a fully guided antiship mission to locate and strike a target hulk.

Fort Worth Couple Relives the Rugged, Old Days of the Covered Wagon

The beginning of the new year found Fort Worth employee James Whitfield doing something that would have seemed more common a century ago.

While most people were marking off the first days of the 1986 calendar, Whitfield was rolling the calendar back to the days when covered wagons crisscrossed Texas. He and his wife, Suzanne, were among passengers on 83 horse- and mule-drawn wagons in the Texas Wagon Train, a caravan starting off on a 3,028-mile journey in commemoration of Texas' 150th anniversary. The group also included 250 riders on horseback.

Whitfield rode the wagon three days in early January, then left the train to return to more contemporary concerns in his job as an F-16 flight controls engineer at Fort Worth. He has spent most weekends with the train since then, though his wife and some friends riding with her intend to enjoy — or endure — every day of the six-month journey. "My wife has loved horses all of her life, and this is the fulfillment of a dream she has had for years," Whitfield said. "So far, she has been in extremely good spirits. But there is no way to describe how exhausting it feels to ride in a wagon all day."

The wagon-train participants, whose numbers have dwindled some since early January, are not really "roughing it" in the fullest sense. Most have camper trucks or mobile homes that they keep at campsites, and at the end of each day's travel a bus takes some of the riders back to the previous night's camp so that they can get their motor vehicles and drive to the new stop.

In addition to the people riding the wagons and horses, many others are traveling with the train in the other vehicles to supply medical services, sanitation and other logistical requirements. "It's a moving city with a population of about 1,000, including all the support people," Whitfield said.

Suzanne Whitfield and her friends have a camper truck but are thinking of using only the wagon when warmer weather comes. "The wagons are proving to be the most reliable vehicles in the train," Whitfield explained. "They don't need gasoline or tuneups."

The Whitfields modified their wagon from a pony wagon that was made from the chassis of an old railroad baggage wagon. It is approximately six feet wide, 10 feet long and weighs about 300 pounds. Of 43 wagons scheduled to be with the train for the entire trip, it is the only one with iron-spoked wheels.

The train is organized in order of authenticity, according to Whitfield: wagons with wooden-spoked wheels are in front, followed by the Whitfields' wagon, which is followed by a number of wagons with automobile tires.

The wagon is pulled by one horse, but the Whitfields have three on the trip to alternate the work. One is a "domestic mustang," bred from two mustangs in captivity, and is trained for pulling the wagon but not for riding. Another is a saddle horse that pulls the wagon or is ridden by an outrider. The third horse is not trained for the wagon but is used as the outrider's backup horse.

The wagon train entourage includes a feed vendor and a horseshoer who stays busy. Breakdowns are not uncommon. "We — and the horses — just aren't used to pulling wagons, especially with the loads of equipment that some people are towing," Whitfield said.

The train usually travels 15 to 20 miles a day but has covered as much as 33 miles in a day. It travels on back roads whenever possible, but always receives a warm welcome when traveling through a town.

"People have shown a tremendous amount of hospitality by offering a place to camp, an evening meal or a hot shower," said Whitfield. "It's a great feeling to see all the

people watching. The train is really a three-mile-long parade."

The journey began near the town of Sulphur Springs in East Texas. The train will travel through Central Texas, South Texas, West Texas and the Texas Panhandle, finally making its last stop in Fort Worth's historic Stockyards District on July 3rd. Whitfield plans to spend additional weekends with the train and to travel with it for the last six days of the trip.

He said there is great camaraderie among the people making the trip, and a strong feeling of pride about their common Texas heritage. "Every mile of the way has its own story," he said.



Rugged Travel. Wagons and horses in the Texas Wagon Train are circled at a campsite in East Texas (top photo). Fort Worth's James Whitfield (bottom photo) drives his wagon as Patricia Schmidt, a friend of the family, rides along. Whitfield and his wife, Suzanne, built the wagon specifically for use in the Texas Wagon Train.

U.S. Needs a Diversified Fleet of ELVs, Lovelace Tells Congress

(Continued from Page 1)

• A substantial backlog of payloads has been identified as candidates for alternative launch vehicles.

"Based on the results of our study," Lovelace said, "it is our firm belief that if the United States space program is to meet its current commitments, government procurement of a diversified fleet of ELVs is absolutely essential. The strategy should address the long-term objectives of: (1) assuring our access to space, and (2) maintaining the industrial base needed to continue assured access beyond the near-term."

Lovelace said he emphasized the word "continue" because a stop-gap program to solve the immediate problem will not address the fundamental issue, which is to avoid disruption to the national launch capability in the future.

"I would also emphasize the word 'diverse,' because it is clear that the way to protect ourselves against a recurrence of this situation is to have multiple capabilities, so the country is not dependent on any one single system or manufacturer for its entire space launch capability," he said. "The national space transportation system and its infrastructure must be robust."

The essence of this robust launch vehicle fleet, Lovelace said, is a diverse industrial base. The fleet should consist of the Shuttle and a variety of ELVs provided by several manufacturers. NASA and the DOD should manage such a plan, coordinating the national capability with the demand and maintaining a practical surge capacity to assure access to space, he added.

"This plan should recognize the importance of complementary expendable launch vehicles as a supplement to the Shuttle's unique capabilities," Lovelace said. "This total

stable of vehicles should be offered through a single pricing policy. . . . Such a plan should alleviate launch schedule pressures by providing alternative means for launch. In addition, the new price should be targeted to provide a basis for transition to commercial launch services soon after completion of NASA's obligations under the current manifest of launch customers."

Lovelace said the General Dynamics study assessed the company's capability to help replace lost launch capability.

"I am pleased to report to the committee," he said, "that the resources do exist in at least four major areas which would enable us, if called upon, to help meet the country's critical launch requirements."

He said the major areas are: (1) an existing inventory of launch vehicles; (2) an existing production line to manufacture additional launch vehicles; (3) an existing group of operational launch complexes from which to fly the missions; and (4) an existing team of experienced management, technical and launch services personnel to staff a substantial program.

Regarding the first of these areas, existing launch vehicles, Lovelace said, there are currently both Atlas and Atlas/Centaurs coming off the production line. Three Atlas/Centaurs are currently planned to launch Navy FleetSatCom satellites. Two of those launches are scheduled for this year and one for next year. In addition, there remains one Atlas-H vehicle which is ready for launch and 12 Atlas-Es to be refurbished for launch from Vandenberg AFB, Calif.

"Secondly, in the area of production capability," Lovelace said, "we have the only existing operational production line to produce additional medium-size launch vehicles in the country. It is our belief we have the current capacity to build three Atlases or Atlas/Centaurs in 1988,

and five each in the years 1989 through 1992. Future production of the Centaur upper-stage vehicle can also be accelerated by the addition of more facilities, thus expediting production of Titan/Centaur and Atlas/Centaur, as well as the Shuttle/Centaur."

Lovelace said the third area where substantial existing assets can be drawn from is in launch sites. Existing launch facilities can support increased ELV activities, and other facilities could be reactivated to meet all the necessary requirements in accommodating the displaced Shuttle payloads.

Lovelace said, "The fourth and final resource which we have on hand today is perhaps the most important of all, and that is the existence of the team of dedicated and experienced management and technical personnel which has made the Atlas family of launch vehicles one of the most successful space programs in the world over a quarter of a century. To date, 486 Atlases have flown. These missions have included manned, scientific, planetary, meteorological, Navstar, GPS and commercial communications satellites."

Lovelace said the purpose of a multilaunch vehicle approach is to make the Space Shuttle available for national priority missions while providing reliable U.S. launch capacity for a diverse user community.

"We believe that until the Shuttle manifest overflow subsides," he said, "the Shuttle program will most likely emphasize Shuttle-unique payloads. We believe the Space Shuttle is a magnificent flying machine."

"We regret, as do all Americans, the *Challenger* tragedy and the loss of the seven brave and dedicated crew members. We do, however, trust that the Space Shuttle will soon fly again and be a great source of national pride," he said.

EB Employee Drive Grants Fond Wishes Of Afflicted Children

Five seriously ill children realized their fondest wishes recently, thanks to the efforts and generosity of a number of employees in several departments at Electric Boat's Groton, Conn., facility.

Personnel on all three shifts in the Data Processing and Paint departments contributed a total of more than \$8,300 to "A Child's Wish Come True," a volunteer organization that grants wishes for youngsters with life-threatening diseases.

Data Processing donated the largest amount — \$7,035 — which department members had collected from a gift fund during 1985 through \$1-a-week employee contributions and a number of raffles. The amount was up sharply from the \$2,500 the department gave in 1984.

The painters contributed \$1,368, which had been collected over a period of three days by union stewards on all three shifts.

Dianne Collins, Welder Foreman in Groton and the state coordinator of "A Child's Wish Come True," said, "I just couldn't believe it. It was the largest single donation we've ever received."

The money, Collins said, went to send three children to Disney World. Another child received a new bedroom set, while the fifth received a swing set. Four of the children have cancer and one has cystic fibrosis.

"This thing just snowballed," said Bob DeGaetano, Computer Operations Supervisor in Data Processing. "We started the gift fund, and it just grew and grew. We had support not only from our own people but also from Payroll, Timekeeping, Material and Systems Technology. We're definitely going to do something to continue the project."

Former Homemaker Has Reached Her Goal As a Quality Analyst

Fort Worth employee Pam R. Norris began preparing for a career in the Quality field several years ago while she was a homemaker caring for two small children, and her determination has paid off.

She took her first step by taking courses toward a Quality Technology associate degree at Tarrant County Junior College in Fort Worth, looking ahead to a day when she might apply for work at General Dynamics, since she had "always liked airplanes."

With both daughters in elementary school and her Norris degree requirements complete, her goal became reality when she joined the company as a Quality Control Analyst. She was assigned to the second shift on Fort Worth's flight line last year, and her present job is to verify that all preflight inspections have been made prior to functional check flights of new F-16s.

Norris was a recipient of a J.Y. McClure Scholarship, a \$500 award made by Fort Worth annually to two Quality Technology students. The scholarships have been presented since 1982, and Norris is the first recipient who became a General Dynamics employee.

The scholarships are named for McClure, who retired in 1981 as Fort Worth Vice President-Quality Assurance. McClure had a distinguished career in the Quality field and served in various offices in the American Society of Quality Control, an organization which has been instrumental in the development of Quality programs at educational institutions.

Norris said she began taking Quality courses after hearing there was a good future in the field and later learned that the scholarships were available. The Quality Technology curriculum was a challenge because it included many subjects that were completely new to her, she said. Required courses deal with metrology, electricity, machine drawing and design, nondestructive inspection and mathematics.

"Besides the concepts and procedures of quality assurance that I learned, I also developed an understanding of the importance of quality," Norris said. "Quality is the foundation of success, and the requirement for quality in a product grows as the degree of technology that goes into the product gets higher."



Convair-Fort Worth's Delta-Wing Hustler

GD Flashback

B-58 Had Bomber Range and Fighter Speed

As with any revolutionary aircraft, it took a lot of innovative engineering to develop the Convair B-58 Hustler.

The B-58 made history as the world's first fully integrated military airplane. All systems were designed from the start to fit the size and shape of the airplane and be compatible with all other systems. Engineers at Fort Worth for the first time were given the responsibility of designing every piece of electronic and avionics equipment as well as the airframe . . . everything but the engines.

The Hustler, as a result, emerged as an unparalleled advance in technology under a new "Weapon System Management" concept. Using this revolutionary approach, Fort Worth was able to design and produce an aircraft that dramatically reversed the trend toward ever larger and heavier bomber aircraft.

As important as these engineering advances were, the B-58's most significant aspect, however, was its performance. The Hustler gave the U.S. Air Force an airplane with bomber range and fighter speed.

Convair-Fort Worth produced 116 of these unconventional and spectacular Hustlers, including eight dual-control TB-58A trainers, and they served with the Strategic Air Command for 10 years. The first test B-58 rolled out of the factory at Fort Worth in October 1956 and made its initial flight on November 11, 1956. On December 1, 1959, the first production Hustler left the factory, and B-58s were delivered to two SAC wings, the 43rd Bomb Wing at Little Rock AFB, Ark., and the 305th Bomb Wing at Bunker Hill AFB, Ind. Both wings retired their Hustlers in January 1970.

The B-58 was the United States' first — and, so far, its only — operational bomber able to deliver a bomb at Mach 2, or twice the speed of sound. Standard combat-configured B-58s with regular U.S. Air Force crews set 19 world records for speed and altitude and won the Thompson Trophy, Mackay Trophy (twice), Bleriot Trophy and Harmon Trophy (twice). A B-58 once flew from Seattle to Carswell AFB, Tex., in 80 minutes, at supersonic speed. Another flew 1,100 miles to Carswell from Edwards AFB, Calif., at an altitude of 500 feet at more than 500 miles an hour.

Despite its mission as a strategic bomber, the Hustler was designed as a relatively small airplane. It was 96 ft., 9 in. long, had a wingspan of 56 ft., 10 in. and was 31 ft., 5 in. tall. The B-58 had a crew of three — pilot, navigator-bombardier and defensive systems operator.

A special feature of the B-58's construction was the absence of rivets. Most of the structure was covered by panels of honeycombed skin, consisting of two sheets of aluminum bonded to a honeycomb of fiberglass or aluminum. The small air spaces allowed the skin to withstand the high temperatures caused by supersonic air friction. The leading edge of the wing, for example, at supersonic speed heated to a sizzling 260 degrees Fahrenheit.

The Hustler was given a delta, or triangular, wing pioneered by Convair, and, to reduce drag, the "area rule" principle was applied to the design of the fuselage to aid in surpassing the speed of sound. This gave the slender fuselage a wasp-waisted shape. The design made it impractical to use a conventional bomb bay, so different detachable and disposable pods were designed to carry a bomb load of conventional and nuclear weapons or fuel.

The pod concept gave the B-58 unusual mission versatility. On a photo reconnaissance mission, it could carry powerful aerial cameras for wide-area or close-up coverage. Or a pod could contain electronic systems that collected intelligence on enemy radar and recorded navigational, weather and other vital military information. For the pod to clear the ground, the Hustler was equipped with a stilt-like, 18-wheel landing gear, small enough to retract into the wing, yet strong enough to carry the aircraft's gross weight of 160,000 pounds.

The Hustler also was armed with a 20mm Vulcan cannon in a tail turret, but its primary defense feature was its great performance. It had a top speed of 1,385 miles an hour at 40,000 feet and cruised at 610. It could climb to an altitude of 17,830 feet in one minute and had a ceiling of 64,000 feet and a range of 5,125 miles, with in-flight refueling.

The first B-58 was powered by four General Electric J79-GE-1 engines carried in pods slung under the very thin wings; later models used the J79-GE-5B engine. The engines developed 10,500 pounds of thrust, but this was boosted to 15,600 pounds with afterburner.

The J79, which was designed specifically for the B-58, became one of the world's most successful engines. It was such an outstanding design as a result of the specifications required for the B-58 that it was readily adopted for fighter aircraft.

The remarkable B-58 was an engineering marvel. It was a weapon system that drew descriptive superlatives because no aircraft before it had so radically departed from the technology of its day.

Three Engineers Honored for Support of M1 Units

Three Land Systems engineers have received a Certificate of Achievement from the 66th Armor Regiment for their support in the 1985 gunnery competition for the Canadian Army Trophy (CAT) held in northern Germany.

Steven J. Reimers, Philip W. Reske and Karl W. Wojcik, all from Turret Systems, each received the Certificate of Achievement from Capt. John Schlott, Commanding Officer, C Company, 2nd Battalion, 66th Armor Regiment.

The three men inspected the M1 tanks of C Company and those of A Company, 3rd Battalion, 64th Armor Regiment, to verify that the fire control systems were operating at their best.

The CAT competition involved NATO armor units with tank crews from various countries participating. The consistently high scores turned in by crews of the M1 tanks were described by a British defense publication as "the unofficial benchmark for the competition."



Ship Cosponsors. (At Left) Two sisters of 1st Lt. Jack Lummus share the honor of christening a Maritime Prepositioning Ship in his name. Breaking bottles of champagne against the striking bar on the bow of the ship are Mrs. Dorsey T. Merritt (left) and Mrs. Thomas G. Wright. (At Right) Balloons soar skyward as the *1st Lt. Jack Lummus* is christened at the Quincy shipyard on Feb. 22nd.

Fourth Quincy-Built Supply Ship Christened in Honor of USMC Hero

The *1st Lt. Jack Lummus*, the fourth of five Maritime Prepositioning Ships (MPS) designed and built at Quincy Shipbuilding, was christened in a cosponsored ceremony at the shipyard Feb. 22nd.

The 22,700-ton supply ship was named in honor of U.S. Marine Corps 1st Lt. Jack Lummus from Ennis, Tex., who was awarded the Medal of Honor posthumously for his valor in action against the Japanese on the island of Iwo Jima in World War II.

The ship was cosponsored by Mrs. Thomas G. Wright of Ennis, Tex., and Mrs. Dorsey T. Merritt of Fort Worth, two sisters of Lieutenant Lummus. In unison they said, "We christen this ship *1st Lt. Jack Lummus*. May God bless her and all who sail in her." Then they simultaneously smashed bottles of champagne against the striking bar on the bow of the ship.

After delivery to the Navy's Military Sealift Command on Mar. 6th, the 671-foot cargo ship joined other MPS vessels in providing support at strategic locations around the world for the U.S. Rapid Deployment Force. It is capable of supplying one-fourth of a U.S. Marine Corps amphibious force for 30 days.

U.S. Congressman Nicholas Mavroules of Massachusetts, principal speaker at the christening, said that the Marines who will utilize the Maritime Prepositioning Ships might use them in the future to counteract terrorism throughout the world.

Congressman Mavroules said that, because of his work on the House Committee on Armed Services, the Marines "have won a very special place in my own heart."

"In July of 1983, I traveled to Beirut and spent the 4th of July with those young men assigned to the multinational

peace-keeping mission in Lebanon," he said. "Six months later, under far different circumstances, I tragically found myself again in Beirut — leading the congressional investigation into the terrorist bombing of the Marine barracks."

"Those are experiences I will never forget. The moments and memories of our Marines will always remain very clear. In fact," he said, "this ship may some day play a part in our fight to stop terrorism."

Rear Adm. Walter Piotti, Commander of the Military Sealift Command, praised the Quincy workers for the quality of their work. He said he had seen "several (Quincy) ships travel down the ways and in later years, since I put on this uniform, I have sailed in many of those ships, and anything that you have heard today about the quality of Quincy-built ships is true."

General Dynamics President Oliver C. Boileau, who welcomed the guests, said, "This dedicated team has built a reputation for constructing high quality, complex vessels on schedule. The men and women of this yard for decades have produced the finest ships in the world. We are here today to honor them at this christening."

Gary S. Grimes, Vice President and Quincy Shipbuilding General Manager, compared Lieutenant Lummus' commitment and dedication on Iwo Jima to the spirit reflected at the Quincy shipyard by the "thousands of Quincy craftsmen whose pride and professionalism put aside their feelings of personal uncertainty and completed this ship on schedule and within budget."

The *1st Lt. Jack Lummus* was the first MPS christened this year.

Three Quincy-built MPS vessels were christened last year. The *2nd Lt. John P. Bobo* was christened on Jan. 19,

1985, the *Pfc. Dewayne T. Williams* was christened May 18, 1985, and the *1st Lt. Baldomero Lopez* was christened on Oct. 26, 1985.

The fifth MPS, the *Sgt. William R. Button*, is under construction at the Quincy yard and is scheduled to be christened in May.

All five ships have been named for USMC officers and enlisted men who have been awarded the Medal of Honor.

Lieutenant Lummus was born in Ennis, Tex., on Oct. 22, 1915. He finished his high school education at Texas Military College, graduating in 1937. He was a standout performer in baseball and football and earned an athletic scholarship to Baylor University, where he was selected to three All Conference baseball squads. During his senior year, he was picked for the All Conference football team and nominated for All American honors.

In the summer of 1941, he played professional baseball with the Wichita Falls (Texas) Team of the Western Texas-New Mexico League. In the preceding fall, he had signed up with the New York (football) Giants and was still on their roster when he enlisted in the Marine Corps Reserve on January 30, 1941.

Lieutenant Lummus landed on Iwo Jima on Feb. 19, 1945, and went into combat immediately. On Mar. 8, 1945, he was leading his rifle platoon into action when he and his men were pinned down by enemy fire. He unhesitatingly charged forward, and although wounded twice, he disregarded his wounds and singlehandedly destroyed three enemy installations. Then, leading his men forward, he stepped on a land mine and was mortally wounded. He died the same day and was buried in the 5th Marine Division cemetery on Iwo Jima.

F-16 With System Improvements Being Test-Flown at Edwards AFB

Successful flight testing of an F-16 modified with F-16A/B Operational Capabilities Upgrade (OCU) enhancements is proceeding on schedule at Edwards AFB, Calif.

The OCU program will provide various system improvements to 770 U.S. Air Force, Belgian, Dutch, Norwegian and Danish F-16s manufactured during production Block 15.

Planned improvements include expanded avionic computer capacity, provisions for beyond-visual range and antishipping missiles, mission data load capability, enhanced low-altitude flight safety and an avionic system software update. The OCU program will make the modifications on previously delivered aircraft and to future F-16A/B aircraft purchased by the four European countries.

"Incorporation of these capabilities into the F-16A/B aircraft will result in a significant increase in their operational effectiveness," said Tom Collins, OCU Program Director at Fort Worth. "These changes will help maintain the viability of F-16A/B aircraft to counter the threat well into the 1990s."

The test aircraft, F-16A No. 60, was modified late last year at Edwards AFB by a joint USAF/General Dynamics

team. It was flown for the first time in the OCU configuration early in January by John A. Fergione, Fort Worth Senior Experimental Test Pilot.

The OCU features will be retrofitted to all USAF and European Block 15 F-16s beginning in the fall of 1987. The first aircraft produced with the changes already incorporated are scheduled to be delivered from the SABCA and Fokker F-16 assembly lines in Europe late in 1987.

Two F-16A/B aircraft will arrive at Fort Worth this spring for installation of OCU retrofit kits. Later in the year, the USAF will modify two additional aircraft at the Ogden Air Logistics Center, Hill AFB, Utah, to "proof" the Fort Worth-produced kits.

Block 15 F-16s already have some of the structural and wiring features needed to accommodate the OCU systems, since they were first delivered under Phase I of the Multinational Staged Improvement Program. A plan to provide the same upgrades to earlier model, Block 10 F-16s, is being considered by the USAF and European air forces.

The avionic computer improvements include installation of an expanded fire control computer with memory capacity increased from 32,000 words to 128,000 words, with 63 percent of the capacity available as reserve. The expanded fire control computer also provides a 54 percent increase

in throughput capacity over the original F-16A/B fire control computer, for faster computation. The central interface unit will be expanded to a 35 percent reserve for future weapons.

Provisions for the beyond-visual range missile, consisting primarily of avionics software, radar computer and wiring changes, will enable the aircraft to carry and launch the Advanced Medium Range Air-to-Air Missile. The antishipping missile provisions provide compatibility with the Royal Norwegian Air Force's Penguin missile. As part of the flight test program, F-16A No. 60 is scheduled to launch a Penguin missile at Point Mugu, Calif., this summer.

The F-16 Data Transfer Unit to be added under the OCU provides the same premission planning capability as that incorporated in F-16C/D aircraft. The system interface is also compatible with the Royal Netherlands Air Force Mission Planning System. The Combined Altitude Radar Altimeter equipment to be added to the OCU aircraft is that used in the F-16C/D.

In addition to the other capabilities, a low-altitude warning system will be evaluated in the flight test program. Visual warning displays and aural tones will warn the pilot of his low altitude.

Company Is Selected In Design Competition For Aerospace Plane

A \$7-million contract for research and development in the next stage of the National Aerospace Plane (NASP) program was recently awarded to General Dynamics by the Department of Defense and the National Aeronautics and Space Administration.

Fort Worth will lead the corporation's effort in the program, with support from Space Systems and Convair. The contract is for airframe development and has a potential value of up to \$32 million.

The NASP program could lead to the introduction of an entirely new family of aerospace vehicles, the Department of Defense noted in its contract award announcement on April 7th.

As a space launch vehicle operating from conventional runways, the fully reusable and single stage aspects of the NASP are expected to significantly reduce the cost of placing payloads in orbit.

In addition to General Dynamics, four other contractors will participate in a broad design competition with NASP contracts. The field will then be narrowed to two or three airframe contractors.

General Dynamics has been working on advanced technologies associated with the NASP program for a number of years.

Two companies have also been selected to proceed with propulsion development in the program.

"General Dynamics is very pleased to have been selected to participate in the next phase of the highly important National Aerospace Plane program," the company said in a statement issued after the contract award. "We look forward to continuing this high priority development work."

Public Broadcasting Programs Sponsored By General Dynamics

The distinguished careers and lives of Winston Churchill and Dwight David Eisenhower, memorable 20th century figures whose visionary courage guided the Allied nations to victory in World War II and whose leadership both in and out of office affected the course of postwar history, will be the subjects of two remarkable one-man shows airing on national public television.

"Winston Churchill" will air on Wednesday, June 18th, and "Ike" in October. Productions of The Susskind Company, these 90-minute premiere presentations will be underwritten by General Dynamics.

Chairman Stanley C. Pace said, "General Dynamics has been looking at proposals for PBS sponsorship for several years with the intent of taking our place among the

(Continued on Page 7)

Electric Boat Wins Major Contracts

The U.S. Navy announced March 21st that it had awarded Electric Boat a \$1.03-billion contract for all four SSN 688 fast-attack submarines in its 1986 budget.

That announcement followed the March 17th announcement of an award of a \$587-million contract to Electric Boat to begin work on the 13th Trident submarine.

The total of the awards of more than \$1.6 billion is expected to stabilize employment levels at both the division's Groton, Conn., and Quonset Point, R.I., facilities until 1990.

The contract for four fast-attack submarines represents the largest single-year award Electric Boat has won in more than a decade of competition with Newport News Shipbuilding and Drydock Company.



The Consolidated PBX-6 Which Will Fly the Atlantic Ocean Next Month

Consolidated-Built PBX-6 Flying Boat to Fly Reenactment of Historic Trans-Atlantic Flight

A World War II airplane built by Consolidated Aircraft Company is going to play a central role in the celebration this year of the 75th anniversary of U.S. Naval Aviation.

The Navy will commemorate the diamond jubilee with activities recalling notable achievements by naval aircraft during the past 75 years, and the major event will be the reenactment next month of the first crossing of the Atlantic Ocean by airplane in 1919.

That remarkable feat was accomplished by a U.S. Navy flying boat, the NC-4, which was the only one of a group of three to complete the scheduled trip from Newfoundland to Portugal.

The Curtiss NC-4 and two sister ships left Rockaway, Long Island, N.Y., on May 8, 1919, on a testing flight to Trepassey, Newfoundland, jumping off place for the trans-Atlantic flight. Eight days later, the three planes left for Lisbon, Portugal, with a scheduled refueling stop at the Azores. History was made with the NC-4's arrival at Lisbon, and the plane's triumphant crew later flew it to Spain and then on to England.

The first nonstop solo flight across the Atlantic was not made until 1927, when Charles A. Lindbergh flew from

New York to Paris in his "Spirit of St. Louis."

Next month, the route and schedule of the NC-4 will be duplicated by a Consolidated PBX-6 Catalina amphibian.

The Consolidated PBX Catalina was one of the most respected aircraft in World War II because of its search and rescue missions over large areas of water, saving countless allied sailors and downed airmen.

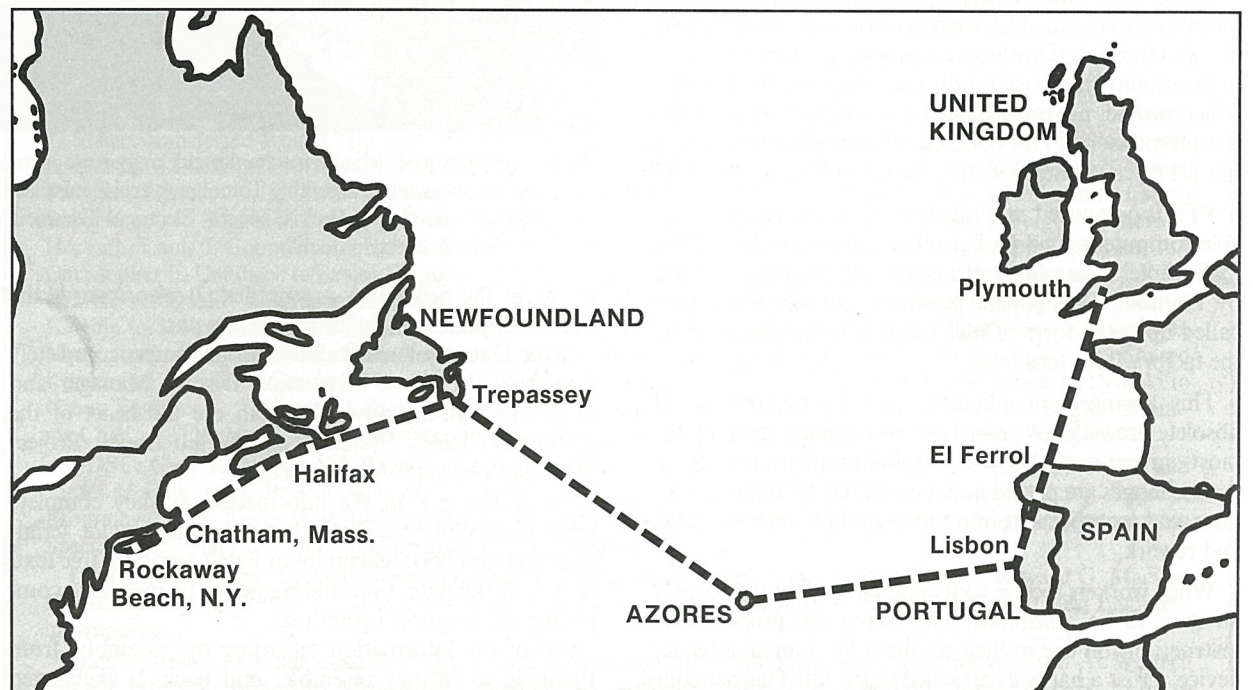
The Consolidated Aircraft Company was one of the predecessor companies of General Dynamics, and General Dynamics is sponsoring the reenactment by underwriting the costs of fuel, insurance and other related expenses.

The reenactment is sponsored by the Naval Aviation Museum Foundation, under the auspices of the 75th Anniversary of Naval Aviation Committee.

The specially painted PBX-6, now considered a vintage airplane, is owned by Wilson "Connie" Edwards of Big Spring, Tex., who has restored the Catalina to mint condition. Edwards will be the command pilot for the reenactment.

The 1986 crossing of the Atlantic will be preceded by a flight May 5th from the Naval Air Station at Pensacola,

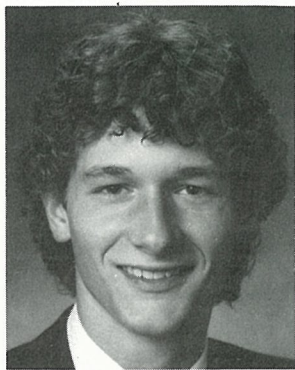
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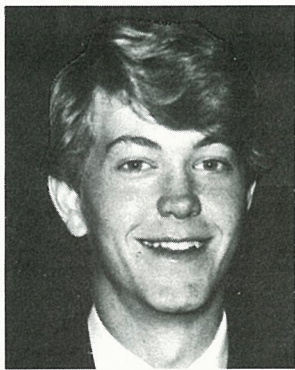
Route of the U.S. Navy NC-4 Flying Boat in Its Successful Trans-Atlantic Crossing in 1919



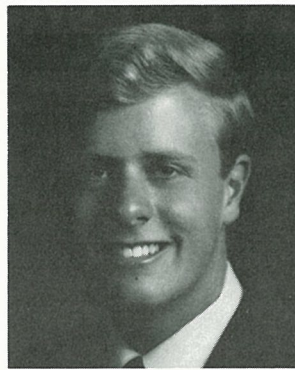
Edwards



Shindell



McRay



Marsden



Lenosky



Klingler

Six Children of Employees Win Four-Year College Scholarships

Ten high school students, six of whom are children of General Dynamics employees, have won company-sponsored, four-year college scholarships to begin in September.

Eight of the winners have been awarded National Merit Scholarships, and two have been awarded National Achievement Scholarships. The scholarship program is administered by the National Merit Scholarship Corporation.

The National Merit Scholarship winners, announced recently, are:

Christa M. Edwards, 18, of Carlsbad, Calif., the daughter of Albert G. and Marian J. Edwards. Her father is Senior Industrial Engineer at Convair.

Christa plans to attend Stanford University and study business administration.

Robert C. Shindell, 18, of East Greenwich, R.I., the son of Charles B. and Valerie A. Shindell. His father is Engineering Aide at Electric Boat.

Robert plans to attend the University of Rhode Island and study engineering.

Mark L. McRay, 17, of Camden, Ark., the son of Lawrence E. and Marylyn A. McRay. His father is Manager-Procurement Engineering at the Camden Facility.

Mark plans to attend California State Polytechnic University-Pomona and study engineering.

Phillip S. Marsden, 17, of Coronado, Calif., the son of Phillip S. and Martha A. Marsden. His father is Engineer Specialist at Convair.

Phillip plans to attend the University of California-Berkeley and study aeronautical engineering.

Thomas J. Lenosky, 17, of Troy, Mich., the son of John and Jean M. Lenosky. His father is Senior Engineer at Land Systems.

Thomas plans to attend the Massachusetts Institute of Technology and study engineering.

Andrew S. Klingler, 17, of San Diego, Calif., the son of Stanford R. and Patricia G. Klingler. His father is a program manager at Electronics Division.

Andrew plans to attend Princeton University and study physics.

Craig Gifford, 17, of Midland, Tex., the son of Troy A. Jr. and Clare R. Gifford. His father is Director of Finance for the City of Midland, and his mother is a mathematics education consultant for the Ector County Independent School District.

Craig plans to attend the University of Texas and study engineering.

Connie Chen, 17, of El Cerrito, Calif., the daughter of P. C. and Agnes Chen. Her father is an engineering consultant for Interpacific Technology, Inc., and her mother is a librarian for the Conera Costa County Library System.

Connie plans to attend Stanford University and study business administration.

National Achievement Scholarship winners are:

Paul K. Jenkins, 18, of Lynchburg, Va., the son of Warren W. and Berta M. Jenkins. His father works for the U.S. Postal Service, and his mother is a homemaker.

Paul plans to attend the Massachusetts Institute of Technology and study engineering.

Viveca A. Fairbanks, 18, of St. Louis, Mo., the daughter of Frederick J. and Lucille C. Fairbanks. Her father is a design specialist at McDonnell Douglas Astronautics Co., and her mother is a preschool coordinator for the St. Louis Board of Education.

Viveca plans to attend Purdue University and study engineering.

The four-year scholarships provide for a minimum of \$1,000 to \$3,000 a year, depending on the cost of tuition and the family's financial status.

Each year, General Dynamics sponsors four National Merit Scholarships for outstanding students who are children of General Dynamics employees and two National Achievement Scholarships for students who live in the area of one of the corporation's facilities and who need not be children of employees.

This year only, General Dynamics also sponsored two National Merit Scholarships for students who are not children of company employees.

Paperwork Burden to Be Lifted at Convair's "Paperless" Factory By Charles Brown

The Convair Division is doing its part to cut down drastically on the volume of paperwork in its daily operations and is moving closer to an information-driven "paperless" factory, where manufacturing instructions and assembly records will be available at computer terminals in the workplace.

As the number of operations associated with a product increases, so does the volume of paperwork. Assembly and installation plans provide manufacturing instructions and also serve as a record of which operations were completed by whom and when. These records are required both by our customer and as an internal audit trail for assembly of complex equipment.

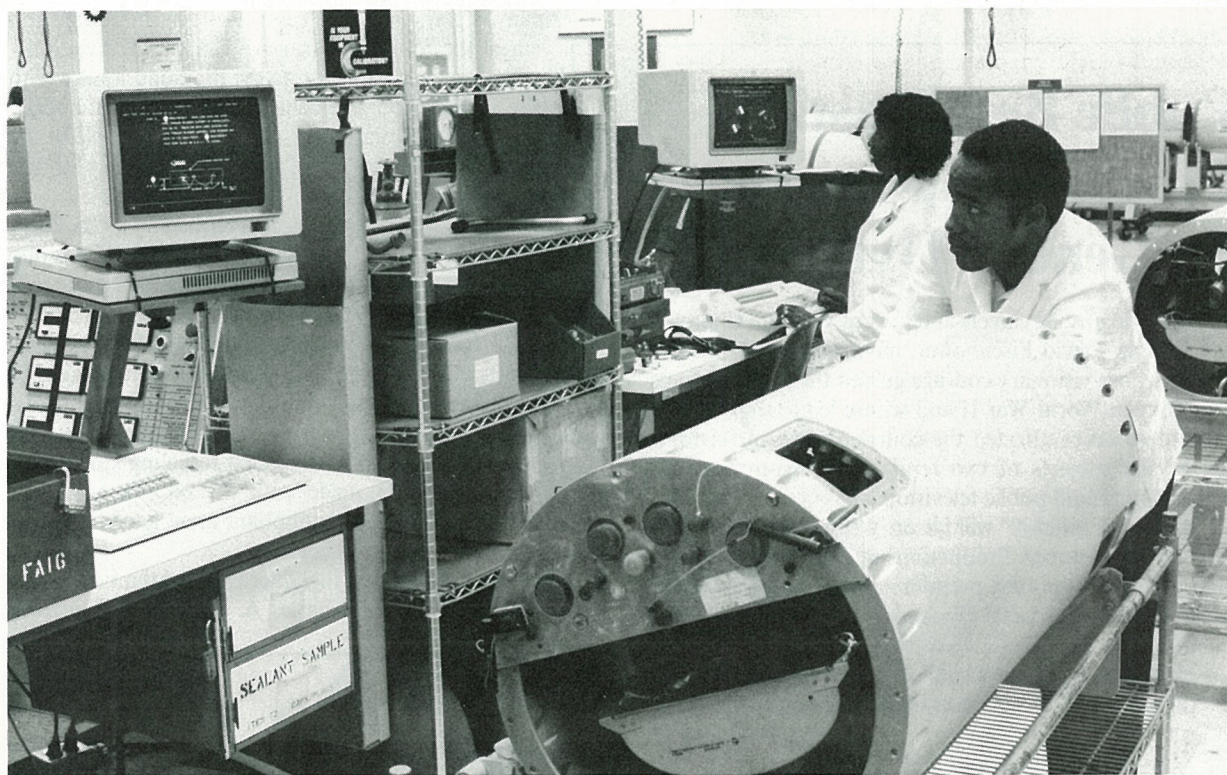
To reduce the burden of this paper system and to increase the flexibility associated with assembly and installation plans, Convair and the Western Center of Data Systems Division jointly developed the Paperless Factory System (PFS) as a computer tool to help create, control and distribute the assembly and installation plans in Cruise Missile final assembly.

Jim Dooley, who has been associated with PFS since its inception, said, "In 1982, each division was challenged by the Productivity Directors to propose a high potential, high visibility, high risk productivity improvement project which would not ordinarily be attempted without the special sponsorship they offered. The project selected from our list of candidates was this Paperless Factory System."

PFS is composed of a highly reliable and readily available computer network of terminals connected to an IBM mainframe. Assembly and installation plans are created by Planning Department personnel, and these are then called up in the form of text and graphic information on the factory floor terminals.

This arrangement eliminates any inadvertent use of obsolete drawings or procedures. Assemblers get only the most current assembly and installation plans, and document changes are passed along immediately to the factory floor and incorporated into the assembly, reducing scrap and rework.

When workers receive a kit containing all of the parts of an item to be assembled, they bring the proper work instructions on line at their terminal by running a reader device across a bar code attached to the kit. This bar code contains the serial number of that particular kit, and the system automatically displays the instructions on the



Paperwork Reduced. Missile mechanics at Convair use instructions on their computer terminal screens instead of instructions on paper to assemble Tomahawk cruise missiles. Anthony Smith, Operations Representative, (foreground), and Naomi Harris, Missile Electrical Technician, check their individual computer screens for the necessary information.

screen in the order they are needed. It also records the status of operations performed on the part.

"Our Data Systems Division programmers completely developed the Work Instruction Display Manager and other application software, which are the heart of the Paperless Factory System," said Sergio Lopez, Project Manager for DSD's Western Center.

Mechanics put in the information as they complete assembly operations. This information may include serialized part numbers, sealant lot or batch numbers, free text, as well as the date, time and name of the mechanic completing the assembly operation.

All of the information regarding the assembly, from Planning to factory assembler and back, is exchanged without using any paper documents. One of the goals of PFS is to reduce the overall need for paper documents in

Cruise Missile final assembly by 85 to 90 percent.

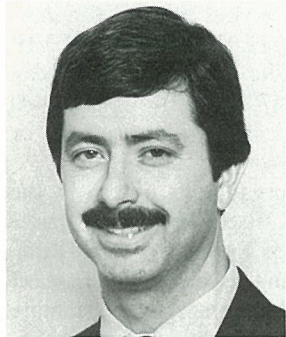
Presently, three lines of Cruise Missile Final Assembly are supported with the Paperless Factory System. It is being used in parallel with the existing paper method to validate the new system. "However, the real test of the system is the acceptance of the mechanics who must use the system daily, and thus far we have received very positive feedback," said John Matson, PFS Project Manager for Convair.

Although the PFS has been developed for Convair's specific needs in Cruise Missile assembly work, the basic concept can be adapted to other factory environments using existing computer capability and readily available terminals. "The major risks have been overcome and we are now more optimistic than ever that the potential that we envisioned is going to be realized," Dooley said.

Lloyd, Miller Named Div. Vice Presidents At GD Services Co.

General Dynamics Services Company has announced the appointments of two Division Vice Presidents. Charles H. Lloyd has been appointed Vice President of Administration and Controller, and Thomas J. Miller has been appointed Vice President of Marketing and Business Development.

Lloyd has overall responsibility for finance, accounting, contracts, estimating, procurement and facilities for GDSC. He joined General Dynamics at the Corporate Office in 1980 as Corporate Manager of Financial Planning-Aerospace and held the position of Corporate Director of Financial Planning-Commercial prior to transferring to GDSC in April 1984.



Lloyd



Miller

Lloyd received a Bachelor of Science degree in Finance from the Virginia Polytechnic Institute and State University in 1973 and a Master of Business Administration degree from the University of Michigan in 1975. Prior to joining General Dynamics, he held responsible positions on the financial analysis staff of the Ford Motor Company.

Miller has overall responsibility for domestic and international marketing, business development and proposal development for GDSC and recently assumed responsibility for GDSC's operations at Albuquerque, Eglin AFB, Hill AFB and Yuma Proving Grounds.

He received a Bachelor of Science degree in Business Economics from the University of South Carolina in 1974 and served as Director of Legislation for Congressman Charles E. Bennett of Florida and then served as Special Assistant to the Secretary of the Navy.

He joined General Dynamics at the Corporate Office in 1983 and held the position of Corporate Director of Business Development-Land Systems and Services prior to transferring to GDSC in April 1984.

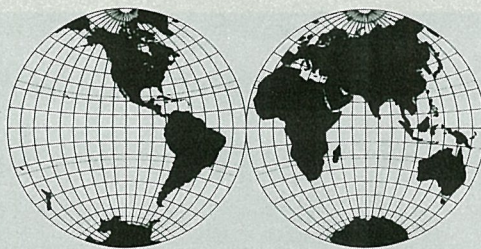
Thunderbirds Flying In 1986 Show Season

The U.S. Air Force Thunderbirds' 1986 flight demonstration season — their fourth flying the F-16 — will be highlighted by a flyover during the Statue of Liberty Rededication Ceremony on July 4th.

The demonstration season runs through November and includes a number of shows near General Dynamics facilities. It opened in March with a show witnessed by 255,000 persons at Williams AFB, Ariz.

Some of the scheduled show sites this year are Sheppard AFB, Tex., on May 3rd; Kelly AFB, Tex., on May 18th; Waco, Tex., on June 14th; Loring AFB, Maine, on June 21st; Springfield, Mo., on June 28th and Richards-Gebaur AFB, Mo., July 19th and 20th.

Other shows will be at Vandenberg AFB, Calif., on August 2nd; Whiteman AFB, Mo., on August 10th; Blytheville AFB, Ark., on Sept. 28th; Langley AFB, Va., on Oct. 19th; Shaw AFB, S.C., on Nov. 1st and Edwards AFB, Calif., on Nov. 9th.



Around the World

CHQ: Richard H. Brown has joined as Facilities Planning Corporate Manager . . . Brian E. Zeger as Subcontract Auditor . . . Todd G. Monte and Michael Doshen as Auditor . . . Leonard D. Gregory as EMOS Software Engineer . . . Robert W. McGuffee as Advanced Systems & R&D Corporate Manager . . . Randall McIntyre as Information Systems Auditor . . . Cathy A. Sachs was promoted to Senior Financial Analyst . . . Greg J. Benken to Financial Analysis Manager.

Fort Worth: Maurice J. Ahearne was promoted to Industrial Engineering Chief . . . Linda S. Ancy to Engineering Administrative Specialist . . . James M. Aslin and William M. White III to Production Specialist . . . Robert E. Atkison to Manufacturing Support Equipment Engineering Specialist . . . Wesley E. Box to Chief of Finance . . . Wilma O. Brigman to Material Planning Supervisor . . . Delbert E. Briley Jr. to Tool Manufacturing General Foreman . . . Michael B. Busby to Program Specialist . . . Jerrell J. Carstarphen and Jerry D. Ponder to General Foreman . . . David R. Coccaro to Field Service Engineer . . . John P. Cole to Quality Assurance Engineering Specialist . . . Terry Cook to Technical Group Supervisor . . . Marvin G. Fain to International Co-Production Chief . . . Nick P. Georges, Russell L. Gillilan and Martha J. Taylor to Material Supervisor . . . Murl J. Grandia and George H. Hayward Jr. to Engineering Program Manager . . . Johnny R. Griffin to Foreman . . . Donald G. Hammond to Engineering Chief . . . Larry M. Jackson to Tool Planning Supervisor . . . George H. McClain Jr. to Engineering Manager . . . O.B. Moberly Jr. to Production Management Specialist . . . Ronny O. Roberts to Quality Assurance Manager . . . Kevin Q. Shaver and William J. Wansing to Manufacturing Control Supervisor . . . Daryl D. Skelton to Manufacturing Engineering Chief . . . Patsy A. Waldrop to Senior Quality Control Engineer . . . David T. Wesolka to Manager of F-16 Programs . . . Boyd E. Wren Jr. to Schedules Specialist.

Convaair: Anthony Angelo was promoted to Manufacturing Chief . . . Harry A. Barker and Robert B. Davis to Manufacturing Operations Supervisor . . . Edward H. Clement and John L. Kusek Jr. to Group Engineer . . . Marvin D. Ebbert and Alan D. Sapowith to Program Engineering Chief . . . Clarence P. Hicks Jr. and Hugh Reynolds to Engineering Chief . . . James W. Jowers and Joseph E. McCafferty to Quality Assurance Group Engineer . . . Jerome W. Kemp to Financial Supervisor . . . Mary C. Hanson to Logistics Supervisor . . . Virginia N. Malec to Accounting Supervisor . . . James M. Meeks to Manufacturing Control Operations Supervisor . . . Glen R. Mickowski to Manufacturing Operations General Supervisor . . . Michael R. Paris and Robert J. Wells to Master Scheduling Supervisor . . . Juerg W. Schaelchlin to Program Manager . . . Richard L. Spiking to Plant Services Operations General Supervisor . . . James R. Stevens to Art and Editorial Supervisor.

Space Systems: Jasna M. Poljak transferred from CHQ and was promoted to Senior Accounting Specialist . . . Robert P. Guth was promoted to Employee Relations Manager . . . Gary M. Chapel, Emmet H. Christensen, Steven A. Kewley and Kenneth A. Vaught Jr. to Engineering Chief . . . Robert W. Parker and Andrew R. Robertson to Engineering Manager . . . Donald M. Dvorak and Paul M. Jones to Manufacturing Operations General Supervisor . . . Robert H. Blumling, Richard C. Flowerree and Richard W. Jennings to Group Engineer.

Electronics: Debra L. Baldwin was promoted to Material Control Supervisor.

Pomona: Clark M. Bostick, Jack L. Brady, Michael Olivieri, and Ralph G. Webster were appointed to Manufacturing & Production Engineering Director . . . Nancy E. DuBois to Staffing Chief . . . Robert Gonzales and Richard W. Love to Staffing Administrator . . . David J. Gross, Harold K. Keener, Paul I. Kim and James A. Wilson to Accounting Chief . . . Marleen F. Hernandez to Purchasing Agent . . . Robert B. Hoffman to Engineering Manager . . . Vivienne A. Johnson to Senior Industrial Relations Representative . . . Max J. Ledesma, Dorothy M. Powers, Roy J. Cleveland and Shawna J. Taylor to Accounting Supervisor . . . Charles W. McKay to Assistant General Counsel . . . James L. Miller to Project Coordinator . . . Glenn F. Northup to Security & Investigation Supervisor . . . Fred W. Papay to Engineering Section Supervisor . . . David F. St. Amand to Manufacturing Supervisor . . . Denise K. Van Zant to Manufacturing Control Chief . . . Owen B. Williams to Compensation Manager . . . Charles F. Wittenbrock to Master Schedules Administrator . . . Chris R. Arth and Samuel C. Scull to Manufacturing Development Specialist . . . Edmund W. Callander to Production Support Manager . . . William G. Cummings, Walter N. Greule, Dennis W. Killian, William W. McCracken and Steven R. Siedschlag to Group Engineer . . . Debra J. Hali and Anita J. O'Brien to Configuration Data Management Analyst . . . Patrick J. Hogan to Senior Quality Assurance Specialist . . . Robert M. Jernejcic to Assistant Project Engineer . . . Frank H. Montgomery Jr. to Marketing Manager . . . John W. Nuechterlein and Russell D. Sweazey to Inspection Chief . . . Devone G. Runyan to Factory Manager . . . Hans P. Schmid to Section Head . . . Michael A. Timanus to Superintendent . . . David A. Yankauskas to Engineering Compensation Support Administrator. At Camden, David L. Byrum and Bob D. Hopper to Manufacturing Supervisor I . . . Edgar C. Parker to Senior Accounting Specialist . . . James R. Dunn to Quality Assurance Supervisor . . . Nell L. Martindill to Engineering Writer . . . Rob O. Morrow to Engineering Assistant . . . Rodney D. Lyons to General Supervisor . . . Debra S. Wright to Manufacturing Supervisor II . . . Pamela J. Kinzel to Material Control Chief . . . Brenda L. Smith to Buyer . . . Bobby J. Hook and Jack D. Estes to Production/Material Control Manager . . . Rodney T. Cole to Quality Assurance Chief . . . George W. Ragsdale to Group Engineer . . . Chester Downey III to Senior Test Engineer.

Electric Boat: James Barney was promoted to Purchasing Chief . . . Carl Pignone to Administrative Control Chief . . . Richard Smith to Site Purchasing Manager . . . David Johnson to General Foreman . . . Nicholas Battles, Douglas Brown, Mark Davis, Robert Disch, John Ennis, Walter Hughes, Michael Hurley, Jeffrey Jordan, Frederick MacNeil, Bruce Motta, John Nichols, Robert Porter, Philip Scalise, David Simas, Roger Stedman, Harry Steele and Joseph Wolff to Foreman . . . Timothy Anderson, Michael Boldizar, Karl Lohr, John Scott and Roberta Sirmons to Engineering Supervisor . . . Aretha Beyers to Associate Engineer . . . Timothy Beyer and Michael Crimmins to Senior Ship Superintendent . . . William Hammel, Richard Long, Kenneth Michaud, Henry Olexy and Robert Samokar to Trade Planning Supervisor . . . William McCaull and Robert Peruzzotti to Group Trade Planner . . . John Rubino to Senior Planning Supervisor . . . Scott Santa to Office System Supervisor . . . Ronald Zeppetti to Contract Evaluation Supervisor. At Quonset Point, Jason Thomas to General Foreman . . . Mark Armstrong, Thomas Higgins, Lawrence Swartz and David Wheeler to Foreman . . . Richard A. Boudreau to Communications and Community Relations Manager . . . Robert Jacques to Senior Packaging Administrator. At Avenel, Jack Clark and Kenneth Londregan to General Foreman.

Land Systems: Edward A. Krzyszczalowicz was appointed to Management Information Systems Director . . . Wayne J. Maier transferred from CHQ and was promoted to Engineering Audit Supervisor . . . Kim S. Tonkovich was promoted to Technical Services Chief . . . Thomas Palazzolo to Program Administrator . . . Les S. McCuen to Senior Facilities Planner . . . Kenneth T. Frosch to Production Control Manager . . . Holly A. Moross to Administration Supervisor . . . Bagish N. Prasad to Program Management Chief . . . Stephen Osinski, Lowell D. Ferguson, Steve S. Horvath, Louis J. Goppoldvonlobsdorf, Richard M. Ingersoll and William M. Mrdeza to Engineering Supervisor . . . Christopher F. Dembeck to Senior Engineering Assistant . . . Michael L. Schany to Program Administrator . . . Keith H. Deters to Quality Assurance Supervisor . . . Norman E. Dilworth to Contract Administration Manager . . . Delmar L. Riffe to Senior Production Planning Analyst . . . Gary L. Hibbert to Tool Engineering Supervisor . . . Juanita B. Moody to Senior Data Management Analyst . . . Raymond N. Ferullo to ILS Field Operations Supervisor . . . Sharad Kumar to Engineering Services Manager . . . Wilfredo P. Abesamis, Wallace J. Chapiewski and James L. Pytleski to Group Engineer . . . Michael D. Szekely to Maintenance General Foreman . . . Samuel D. Vazana to Change Estimating Chief . . . Douglas S. Field to Material Planning & Control Supervisor . . . Jonathan C. Nold to Foreman.

GDSC: Gary K. Nelson and Raymond R. Yinger were promoted to Program Manager . . . Austin R. Bryan and James H. Tilburg to Project Manager . . . Donald H. Copeland to Human Resources Manager-Aircraft Support Programs . . . H. Kevin Wille to Proposal Development Manager . . . Joann B. DeBona to Logistics Automation Specialist . . . Mary C. Linder to Human Resources Specialist.

Datagraphix: Roger C. Atchley was promoted to Marketing Software Support Manager . . . Edward G. Macy to Manufacturing Supervisor . . . Edward M. Gustine to District Service Manager . . . Robert B. Gage to Test Engineering Supervisor.

Data Systems: At Headquarters, Peggy J. Ochs was promoted to Administrative/Financial Analyst. At Western Center, James R. Adams to Management Planning and Analysis Manager. At Central Center, Lloyd H. Koby to Business Systems Development Supervisor . . . Dave E. Mason to Engineering Software Chief. At Eastern Center, Kevin L. Gaulin to Engineering Software Chief . . . Mark J. Dieterle to Engineering Software Supervisor.

GENERAL DYNAMICS

World

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Bob Sweeney, Z. Joe Thornton



Ethics Movie. Filming a scene for “Your Values . . . Our Values” are, from left to right, J. Scott Crist, Director; Todd Finnigan, Assistant Cameraman; T. W. Landis, Cinematographer; Chuck N. DeMund, Coproducer and Writer; Stanley C. Pace, Chairman and Chief Executive Officer, and the coach and members of a Belleville, Ill., Little League team.

Company-Produced Film on Role of Ethics Emphasizes Level of Employee Expectations

It took three months to shoot, runs for about 18 minutes and doesn't have a car chase or a theme song. But “Your Values . . . Our Values,” the film that introduces the 100,000 employees of General Dynamics to the role of ethics in the conduct of business at General Dynamics, stimulated lively interest at ethics awareness seminars throughout the company.

“It's not a training film,” said Kent Druyvesteyn, Corporate Ethics Program Director, “but its purpose is to set the level of expectations for the meaning and importance of ethical conduct in a business setting. The film shows how the expectations of the company regarding business conduct meet those of the employees. If it weren't too long, the title of the movie should be ‘Your Values Become Our Values and Our Values Become Your Values.’ ”

Shooting for the film began in September 1985 with interviews of employees at Land Systems. Forty-one employees were interviewed there and at Electric Boat, Fort Worth and DatagraphiX. Thirteen of those questioned about the meaning of ethics to them personally and to their business activities appear in the film.

“Employees had a lot to say about these subjects and were extremely forthcoming,” said Chuck N. DeMund,

Acting Corporate Director of Advertising and Promotion, who was Coproducer and Writer for the movie.

“We learned a lot by listening to our fellow employees,” Stanley C. Pace, Chairman and Chief Executive Officer, says at one point in the movie. Reflections on the evolution of business ethics by Pace introduce the film, and his summary of their significance and daily application conclude it.

The scenes with Pace were filmed in October at Shaw Park in Clayton, Mo., a brief walk from Corporate Headquarters. “We linked his thoughts to the baseball game in the park because it serves as one universal example for a small ethical dilemma,” said DeMund. “It is something everyone can identify with. Of course, it also adds visual interest, and ethics is a very difficult subject for a movie because it isn't visual.”

“Your Values . . . Our Values” is not just an integral part of the the company's ethics awareness program. Employees are encouraged to look at the film at their own leisure and share it with nonemployees. Copies of “Your Values . . . Our Values” are available from Ethics Program Directors throughout the company in VHS, BETA, ¾ inch U-matic and 16mm formats.



New Guard F-16 Unit. One of the first F-16s delivered to the Arizona Air National Guard's 162nd Tactical Fighter Group flies over a mountainous area southwest of Tucson. The unit's 148th Tactical Fighter Training Squadron was activated with the Fighting Falcon in a recent ceremony at its base at Tucson International Airport.

Tours Being Offered At Discounted Rates To Orient and Turkey

As part of its continuing commitment to promote tourism to countries ordering the F-16 aircraft and other company products, General Dynamics, starting in June, will offer a variety of tours to the Orient and a special trip to Turkey.

These tours are offered to employees, retirees, their families and friends at a saving of up to 28 percent of market price, depending on the tour and season.

“Legendary Turkey” is a two-week exploration of one of the world's most historic and romantic cultures. Four departures are scheduled in 1986, and three departures are scheduled for spring of 1987. The tours are priced from \$1,894 from New York and include airfare on KLM, first-class hotels, most meals, extensive sightseeing in Turkey, transfers, portorage, taxes and services charges. The same tours are being offered to the general public at \$2,094. VIP Tourism Inc. will provide the tour arrangements and can be called toll free at (800) 847-8875 or (212) 421-5400 between 9 a.m. and 5 p.m. (EDT) for reservations or information.

The collection of Orient tours is being offered by the company in conjunction with Jetset Tours. Tours range from \$1,129 for a 10-day trip to Korea and Hong Kong (inclusive of airfare from Los Angeles, deluxe hotels, select meals, transfers, sightseeing and portorage) to longer, more comprehensive trips to the Orient, including China, Japan, Singapore, Thailand and Indonesia.

There are several choices of departure dates, tour destinations and tour prices throughout 1986, and this discount is available on any Orient tour this year. Brochures for these programs can be obtained from Jetset Tours by calling (800) 421-4603 outside California or (800) 252-2035 within California between 9 a.m. and 5 p.m. (PDT).

Electronics Delivers Its Final B-1 IATE To Rockwell Corp.

The 55th and final B-1B Intermediate Automatic Test Equipment (IATE) station has been delivered by the Electronics Division to Rockwell International Corporation's North American Aircraft Operations facility in Lakewood, Calif.

The IATE stations are used in the avionics repair shop for automatic functional testing and fault isolation on the offensive and defensive avionics of the B-1B bomber.

Electronics Division has been developing and producing the B-1B test stations under contract from Rockwell, builder of the long-range bomber. Thirty-one of the 55 stations delivered passed manufacturer and customer inspections in a zero defects condition, and the delivered stations had achieved a 93 percent availability in the field to date.

Quality Circle Savings

The Material Quality Circle — named the Pyramids — at Land Systems' Center Line facility recently completed a 13-month project that resulted in savings of more than \$350,000 during the period.

The project involved the preparation and analysis of the use of an Inventory Transfer Notice to best make use of excess material purchased through minimum buys.

The new system introduces more flexibility, reduces inventory, permits more effective use of minimum buys, decreases shortages and shortens engineering lead times.

Savings and Stock Investment Values		
	Cumulative Annual Rate of Return	
	Jan. 31, 1985	Jan. 31, 1986
Salaried		
Government Bonds	10.52%	14.18%
Diversified Portfolio	16.98%	28.44%
Fixed Income	12.54%	12.30%
Hourly		
Government Bonds	10.54%	14.26%
Diversified Portfolio	16.39%	28.25%
Fixed Income*	—	12.47%
GD Stock Closing Price	\$76.50	\$70.00
* Fixed Income effective 6/30/85		



F-16 Test Flights. In the photo at left, a ground crew of General Dynamics employees assigned to Edwards AFB, Calif., prepares one of the many F-16s at the base for a test flight. At right, an F-16 test aircraft flies over the remote base in the western Mojave Desert. At times, as many as 19 F-16s are based at Edwards in various types of evaluations. About 240 employees from the Fort Worth Division work full time at Edwards.

Company Facility at Edwards AFB Is Like a Miniature Division By Joe Stout

Approximately 240 General Dynamics employees have important jobs at Edwards AFB, Calif. As members of the F-16 Combined Test Force (CTF), they are part of a USAF and contractor team that conducts almost all F-16 flight testing.

The General Dynamics facility at Edwards is under the umbrella of Fort Worth, with Facility Manager George H. McClain reporting to Philip F. Oestricher, Director of Flight Test in Fort Worth's Engineering Department.

The facility is a microcosm of most other General Dynamics divisions and locations. "We have organizations equivalent to most of the major departments at any division, from Engineering to Administration to Logistics," said McClain. "Our major efforts center around aircraft operations and maintenance with some modification activities. One area we don't have is manufacturing. We're strictly a test facility."

Edwards AFB covers 301,000 acres of the western Mojave Desert about 100 miles northeast of Los Angeles. It is the home of the Air Force Flight Test Center, where the USAF has tested, developed and evaluated nearly every aircraft in its inventory for the past four decades.

The USAF has airmen, pilots and other officers assigned with the F-16 CTF. Besides the USAF and General Dynamics members, a much smaller number of persons representing subcontractor firms work with the CTF.

The CTF is housed in several buildings, including two aircraft hangars. F-16s under company responsibility are kept in one hangar, and the aircraft maintained by the Air Force in the other. As of February, the company had five aircraft and the Air Force nine under test at Edwards.

The company normally has two pilots at Edwards: one assigned permanently and another rotated from among those in Fort Worth's Flight Operations group. The number of Air Force pilots in the CTF varies, with the average being about 12.

Pilots in the CTF are assigned to specific projects, but company pilots sometimes fly the Air Force aircraft, and Air Force pilots also fly the company-maintained F-16s.

Test Programs Specific

Flight test engineers write test plans according to requirements supplied to them by system development engineers at Fort Worth. Once the overall test plan is developed and approved, the project flight test engineer and systems engineers write "run cards" for individual flights. Later, when the flight is made, the pilot has a copy of the run card strapped to his knee as a step-by-step guide.

Company and USAF flight test engineers attend weekly scheduling meetings with General Dynamics employee

Terry L. Scott, who schedules all test flights for the F-16 CTF and obtains clearances for flights.

Test resources for a flight, in addition to the runway and airspace, may include USAF "chase" aircraft for photography, "target" aircraft for radar testing, air refueling tanker support and such facilities as the Ridley Mission Control Center at Edwards, where telemetry data can be monitored and recorded.

Most of the aircraft operated by the F-16 CTF are modified for monitoring as many as 400 separate test parameters. The F-16's standard 20mm cannon has been removed from some of the airplanes to provide extra room for instrumentation equipment. Other aircraft, used in test programs that require gun firing, carry some of the equipment in external pods.

Typical parameters measured during a flight include temperature, vibration, pressure, fuel flow, aircraft flight conditions and structural strain at different locations.

Company maintenance crews are assigned to specific aircraft. This has proved advantageous because the test aircraft are all configured differently and range in age from F-16B No. 1, a full-scale development aircraft that has been used in high angle of attack testing and has made more than 1,440 flights, to F-16C No. 3, which is being used in Multinational Staged Improvement Program loads testing and testing of alternate F-16 engines.

The Pilot's Role

With the high level of today's technology and the cost of modern aircraft systems, flight testing is not the trial-and-error, unnecessary risk-taking endeavor it sometimes was in the early days of aviation. Through analytical studies, simulation and accumulated knowledge, it has become a much more predictable phase of aircraft development.

When a pilot is assigned to a test project, he usually works with development engineers at Fort Worth before going to Edwards to begin flying with the new system or proposed change. He then provides input during the development of the overall test plan and may advise the flight test engineer in writing run cards for individual flights.

The pilot goes over the run card, step by step, in a preflight briefing with the flight test engineer and others who are familiar with the systems to be tested and the test objectives. While the flight is taking place, the pilot communicates with the flight test engineer at the mission control center by radio. The flight test engineer and others at mission control receive real-time information on the aircraft's condition and performance through telemetry.

"As each test point is accomplished, the pilot decides, in conjunction with the control room, whether it is safe to go

on to the next point," said John A. Fergione, Fort Worth Senior Experimental Test Pilot, who has flown F-16s and the F-16XL extensively at Edwards.

The Ridley complex is the primary mission control facility at Edwards AFB, but General Dynamics also maintains its own, smaller control center in a trailer adjacent to the F-16 CTF buildings. This center is tailored specifically to the F-16 and is used when the Ridley facilities are unavailable because of B-1, Space Shuttle or other testing in progress.

The telemetry room in the trailer has four rows of strip-chart recorders that can monitor and display as many as 48 aircraft parameters in real time. Near these displays is the flight test engineer's console, from which the flight is conducted. It is equipped with a headset for communication with the pilot and a set of gauges that display such aircraft parameters as fuel quantity, Mach number, altitude, angle of attack and acceleration. Another section of the trailer houses computers that convert the telemetry data into a more usable engineering format.

Future F-16 Testing at Edwards

Flight testing of the F-16 will continue at Edwards AFB for as long as the aircraft continues to evolve in capability and configuration. For example, F-16C No. 3, the newest aircraft at the CTF, will soon be joined by later F-16C/D models that will be used in flight tests of additional avionics improvements. Other aircraft are scheduled to arrive at the base for testing of avionics software changes tailored to foreign military sales of F-16C versions. Meanwhile, flight testing will continue in support of the F-16A/B Operational Capabilities Upgrade, Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN), threat warning radar antenna and other programs.

From assisting in the development and proving of new aircraft systems to providing information for inclusion in flight and technical manuals, the flight testing conducted at Edwards AFB makes an important contribution to many aspects of the F-16 program.

The F-16 CTF flies approximately 200 sorties monthly, or about one-third of all test missions flown at the Air Force Flight Test Center. Since its beginning, F-16 flight testing at Edwards AFB has involved more than 28,000 flights and 36,000 flying hours, with no loss of aircraft or personnel.

"This is an excellent safety record for any aircraft type, and it speaks well for the professionalism and dedication of the company personnel at Edwards AFB, along with the Air Force members of the F-16 CTF," McClain said.

Fort Worth Receives \$1 Million Air Force Award for Tech Mod Savings

The U.S. Air Force recently awarded Fort Worth \$1 million, or 100 percent of the possible award fee, for 1985 progress in the F-16 Technology Modernization and Industrial Technology Modernization programs.

Technology Modernization saved the Air Force \$214 million in F-16 production costs through the end of 1985, and it is expected to save more than \$500 million by the end of 1991.

This is the first time the division has earned the full award fee in the history of the F-16 Technology Modernization programs.

The fee determination was made after a division team briefed Maj. Gen. Ronald Yates, F-16 Program Director, and his staff at the F-16 System Program Office, Wright-Patterson AFB, Ohio, on last year's project implementation, commitment of resources, future planning and inno-

vation under the programs.

Projects completed and implemented in 1985 included Laminating Center improvements, advanced wire harness manufacturing methods, the use of computer-aided visual aids in assembly instructions, automated controls for curing of composites, cutting tool maintenance improvements and an advanced control system for robotic devices.

Nuclear Submersible Built at Electric Boat Helps in Search for Space Shuttle Wreckage

A submersible with television cameras and a robot arm participated in the search for wreckage of the Space Shuttle *Challenger* off the east coast of Florida.

It is NR-1, the Navy's nuclear-powered oceanographic research submarine, which was designed and built by Electric Boat and launched at its Groton, Conn., shipyard on Jan. 25, 1969.

The NR-1 was called in to help in the search for parts of the Shuttle which exploded shortly after being launched from Cape Canaveral on Jan. 28th. Seven *Challenger* crew members were killed.

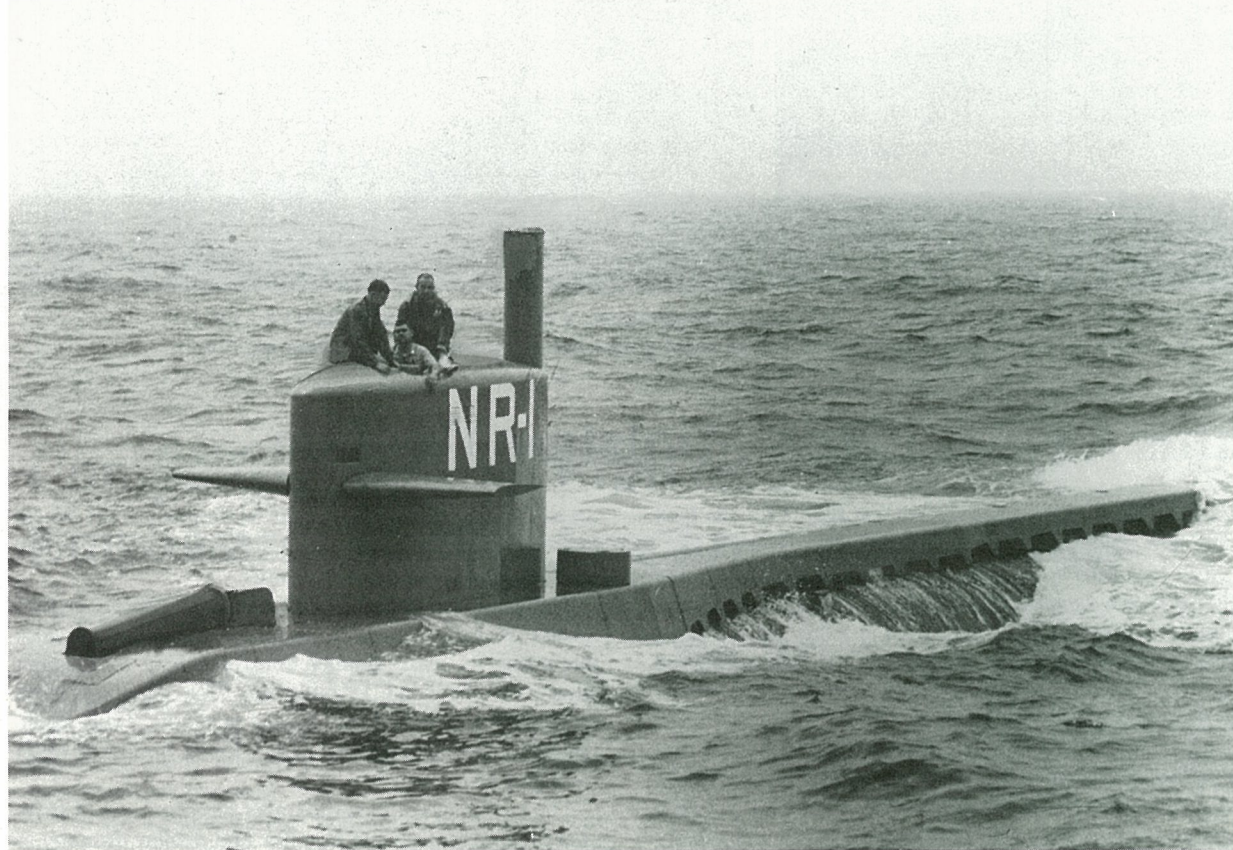
The 140-foot submarine, the only one of its type in the

world, was towed to the site of the tragedy by its mother ship, the submarine rescue vessel *Sunbird*, from its homeport of Groton, Conn.

NR-1, which carries a crew of seven, has a beam of 12 feet and a submerged displacement of 400 tons.

The craft was designed as a multipurpose deep-submergence vehicle capable of conducting military missions as well as Navy and civilian oceanographic missions.

Special oceanographic features of the NR-1 include viewing ports, external lights and TV cameras and a remote-controlled manipulator arm for picking up small objects.



The Electric Boat-Built NR-1 Nuclear Research Submersible

Convair Program on Physical Capabilities Of Employees Receives National Attention

A 40-year-old Convair program of matching the physical abilities of an employee to job requirements has received national attention at a conference of a working group on Aging Workers and Visual Impairment held at the National Academy of Sciences.



Alex

As the result of a discussion of the program in a report prepared for the Senate Special Committee on Aging, Roberta Alex, R.N., Convair's Medical Services Supervisor, was invited to become a panel member at the two-day conference.

At the conference, Alex presented the details of the Convair program, which begins with preemployment

medical screening to determine any physical limitations of the applicant and provides for reevaluation as physical changes occur.

Focusing on the principal subject of the conference,

Alex reminded the attendees that, as a worker matures, the eyes change, and the worker must often use prescription lenses to meet job requirements. This fact is often picked up in the annual visual acuity tests required by Quality Assurance.

Changes in vision caused by eye disease also come to the attention of the medical staff, either through referrals by supervisors or outside medical doctors, or by the employee himself seeking assistance from Medical Services, Alex said.

In either situation, she explained, the company has a number of ways to accommodate the visual impairment, such as providing additional lighting or magnification, work restrictions or a job change, depending on the severity of the condition.

"For both the older employee and the company, a program like Convair's is beneficial," Alex said, "because the employee is not forced into an early retirement but continues to be a contributing member of the work force, able to share skills, knowledge and expertise with younger workers."

Milestone Reached In Cessna's Delivery Of 100th Citation III

Cessna Aircraft Company has reached a major milestone in its Citation business jet program by delivering its 100th Citation III.

The century mark was reached in late March when William Compton, Director of Aircraft Operations for the Martin Marietta Corporation, accepted the aircraft for the company.

The new aircraft was the second Citation III delivered to Martin Marietta in March. The first aircraft is based in Orlando, Fla., and the second will operate out of the company's air transportation center in Denver, Colo.

Martin Marietta has operated a Citation in its fleet of business aircraft since 1978. The company expects to fly each of its Citation IIIs about 1,000 hours per year.

"We are very proud of this milestone in the Citation program," said Cessna Chairman Russell Meyer. "It is a privilege to deliver our 100th Citation III to Martin Marietta, which is not only a fine company, but one which has a great heritage in aviation."

The Citation III is the first and only all-new business jet designed and produced in the United States since the original Citation was introduced in 1972.

"The Citation III represents our largest investment by far in a new aircraft," Meyer said, "but we believe the results and future potential certainly justify that investment."

Meyer added that Cessna delivered the 1,000th Citation in early 1982, just 10 years after the first delivery, "and we will deliver the 1,500th Citation before the end of 1987."

More Citation IIIs have been delivered than any other business jet in its class since its introduction. Six of the top 10 companies in the Fortune 500 operate 13 Citation IIIs, and 32 of the largest companies in the Fortune 500 have ordered 49 of the aircraft.

The 100 Citation III deliveries represent an aggregate of more than half a billion dollars in sales for Cessna.

The Citation III has a top speed of 540 miles per hour and is certified to an altitude of 51,000 feet. It can carry 10 to 13 passengers, and it has a range of 2,540 nautical miles with six passengers and a crew of two.

Electronics Division Has Agreed to Sell Range Product Line

The Electronics Division has announced that it has reached an agreement in principle to sell its range systems product line to Amex Systems Inc., a wholly owned subsidiary of Allied-Signal Inc.

Terms of the sale, including price, are subject to the approval of the boards of directors of General Dynamics and Allied-Signal and appropriate regulatory agencies. Sale of the range systems product line was made because it did not fit the long-range plans of the division.

Announcement of the agreement was made March 27th by Melville R. Barlow, Vice President and General Manager of Electronics Division, and Thomas A. Brancati, President of Amex Systems Inc., to approximately 120 employees who are affected by the sale. All are being offered positions of equivalent responsibility, compensation and benefits with Amex Systems Inc.

Employees Win Coveted Eagle Awards at Pomona and Valley Systems

Seven employees at Pomona and Valley Systems have received the division's Eagle Awards for Excellence.

They are: John Donaldson, Excellence in Facilities Management; Betty Garrison, Excellence in Business Administration; Dick Gillingham, Excellence in Production; Joe Hahn, Excellence in Quality; Dave Rose, Excellence in Engineering; Bob Thompson, Excellence in Technical Program Management, and John Whiteside, Excellence in Labor Relations.

Donaldson, Manager of Facilities Administration and Plant Services at the Valley Systems Division, previously was Manager of Facilities Planning at Pomona. He received the award for work performed at Pomona and for contributions to the successful establishment of the Valley Systems Division in October 1985.

Garrison, Manager of Telecommunications Systems, was cited for her key role in the establishment of Pomona's Electronic Mail/Office Support System and for overseeing the successful installation of the division's new telephone system.

Gillingham, Manager of Production Control-Metal Fabrication, was recognized for making "significant contributions to the Fabrication Department's schedule recoveries across all production programs."

Hahn, Manager of Procurement Quality Assurance, was honored for voluntarily assuming the chairmanship of the corporate Procurement Quality Assurance Group in order to improve interdivision coordination and the quality of supplier material.

Rose, Manager of System Requirements, was recognized

for constantly devising ways to improve the knowledge of engineers, which included the first seminar designed to improve systems engineering capability and allow the corporation to better compete for advanced weapon systems.

Thompson, Standard Missile Systems Engineering Manager, was honored for the technical expertise which has brought him recognition from the U.S. Navy and has increased the probability of overall program success.

Whiteside, Director of Human Resources, was selected for his work in conducting successful labor negotiations.

The Eagle Awards were established six years ago at Pomona to recognize superior achievement and contribution in all phases of the division's activities.

The awards are based on the recommendations of the division's vice presidents and directors.

Consolidated-Built PBY Flying Boat to Reenact First Trans-Atlantic Flight

(Continued from Page 1)

Fla., the home of the U.S. Naval Aviation Museum, to Washington, D.C. On May 6th, as it passes Sandy Hook, N.J., the PBY will be joined in flight by approximately 10 other vintage seaplanes for a once-in-a-lifetime mass water landing at Jamaica Bay, Long Island.

Many festivities are planned for the cities along the route to Plymouth, England. The town of Rockaway plans a citywide New York celebration. The Catalina will be on display and special events will be held there and at all the NC-4 stopovers — Chatham, Mass.; Halifax, Nova Scotia; Trepassey, Newfoundland; the Azores; Lisbon, Portugal; El Ferrol, Spain, and Plymouth, England, where it will land on May 31st.

On June 1st, the PBY will fly on to the Fleet Air Arm Museum at Yeovilton, England. After its return to the U.S., the Catalina will participate in the rededication of the Statue of Liberty by making a water landing near the monument.

The NC-4 was a seaplane intended for war but which made history in peacetime. It had its origins in the German submarine threat in World War I, when long-range seaplanes were desperately needed.

In September 1917, the U.S. Navy Department asked for a design of a seaplane that could fly the Atlantic and be able to attack a U-boat on arrival — a plane that did not exist at that time.

The Navy selected a biplane design by Glenn Curtiss, called NC (for Naval-Curtiss), which featured a short, 44-foot-long hull, with outriggers from the rear of the hull back and upward to support frail-looking rudders and elevators clear of the water.

The NC was 68 feet long, 24 feet high and had a giant wingspan of 126 feet. It was powered by four 12-cylinder, 400-horsepower Liberty engines, which gave it a maximum speed of 74 knots. The roar of the engines and the thrashing wooden propellers was so loud that the spoken word could not be heard in flight by its six-man crew, and communication was reduced to sign language and notes.

With a load of 10,000 pounds of fuel, the NC weighed almost 28,000 pounds.

The NC's two pilots sat in an open cockpit halfway between the bow of the hull and the leading edge of the lower wing and only a foot or two from the whirling propellers. They had only a crude set of instruments.

The commanding officer, who acted as navigator and



Wilson "Connie" Edwards' PBY-6 Takes Off on Test Flight at Big Spring, Tex.

anchor man, sat in a very small cockpit in the hull's bow. Two flight engineers, who could work on the engines in flight if needed, and a radio operator sat in a cockpit at the stern of the hull.

By early 1918, the Secretary of the Navy had placed an order for four of the seaplanes, designated NC-1, NC-2, NC-3 and NC-4. World War I ended before the aircraft were completed, but the work continued, and the four completed NCs were formed into the Navy's Seaplane Division One on May 3, 1919.

The historic trans-Atlantic flight was begun without the NC-2, which had to be cannibalized for parts for the other three seaplanes.

The NC-1, NC-3 and NC-4 took off from Trepassey Bay, Newfoundland, at 7:30 p.m. on May 16, 1919, for the Azores, 1,200 miles away on the longest nonstop flight ever attempted. Since it was completely over water, the Navy used a string of destroyers stretched out at 50-mile intervals along the entire route as a safety precaution. In addition, five battleships were stationed every 400 miles along the way. The ships aided the NCs' navigation by

emitting black smoke by day and flame at night.

The three planes took off in formation and passed the first dozen ships routinely, but the weather turned bad and the other ships were obscured by fog. The airplanes lost sight of each other and had to grope blindly and alone for the Azores hundreds of miles away.

NC-1 soon lost her way and landed in high seas and was severely damaged. Hours later a passing ship picked up her crew, and the NC fleet was down to two planes.

NC-3, after flying 15 hours and 1,380 miles, landed in the fog and suffered irreparable damage to one of her engine mounts. However, with skilled seamanship, she used her good engines to sail on the water for 40 hours, finally reaching the Azores.

NC-4, commanded by Lt. Cdr. Albert C. Read, was the sole aircraft to finish, landing uneventfully in Horta Harbor, 15 hours and 18 minutes after leaving Newfoundland. Ten days later, after a delay because of bad weather, NC-4 left to complete the 900-mile leg to Lisbon.

The NC-4 then flew to El Ferrol, Spain, and Plymouth, England, for a total of more than 50 flight hours from Rockaway, N.Y., to England.

Although Lord Northcliffe and his London *Daily Mail* had offered a 10,000-pound prize for the first crossing of the Atlantic by airplane, the crew of the NC-4, as Navy personnel, could not accept it. However, Congress on Apr. 25, 1935, authorized an NC-4 Medal to be worn by the crewmen, honoring them "for the extraordinary achievement." In order of precedence for Navy personnel, it ranks just ahead of the Byrd Antarctic Expedition Medal of 1928-30.

In a modern tribute, a color painting of the NC-4 now is on display in the National Air and Space Museum of the Smithsonian Institution in Washington, D.C.

It was Charles A. Lindbergh who paid the highest compliment to the NC-4 crew when he reported:

"I had a better chance of reaching Europe in the Spirit of St. Louis than the NC boats had of reaching the Azores. I had a more reliable type of engine, improved instruments and a continent instead of an island for a target. It was skill, determination and a hardworking crew that carried the NC-4 to the completion of the first trans-Atlantic flight."

1986 Jubilee Flight Schedule of Consolidated PBY

May 2 11:00 a.m.	NAS Corpus Christi, Tex. Departs for Pensacola, Fla.	May 9 11:00 a.m.	Chatham, Mass. Flight arrives.
May 5 10:00 a.m.	NAS Pensacola, Fla. Departs for NAF Washington, D.C.	May 10 1:00 p.m.	Chatham, Mass. Departs for S. Weymouth, Mass.
May 5 3:30 p.m.	NAF Washington, D.C. Flight arrives.	May 10 2:00 p.m.	NAS S. Weymouth, Mass. Arrives for a four-day layover
May 6 10:30 a.m.	NAF Washington D.C. Departs for Rockaway, N.Y.	May 14 11:00 a.m.	NAS S. Weymouth, Mass. Departs for Halifax, Nova Scotia
May 6 1:30 p.m.	Rockaway, Jamaica Bay, N.Y. Flight arrives.	May 14	Halifax, Nova Scotia
May 8 10:02 a.m.	Rockaway, Jamaica Bay, N.Y. Departs for NAS S. Weymouth, Mass.	May 15	Trepassey, Newfoundland
May 8 11:22 a.m.	NAS S. Weymouth, Mass. Flight arrives.	May 17	Horta, Azores
May 9 9:30 a.m.	NAS S. Weymouth, Mass. Departs for Chatham, Mass.	May 20	Ponta, Delgada, Azores
		May 27	Lisbon, Portugal
		May 30	El Ferrol, Spain
		May 31	Plymouth, England
		June 1	Yeovilton, England, Fleet Air Arm Museum

General Dynamics to Sponsor Two Programs on Public Television

(Continued from Page 1)

nation's leading corporations in supporting Public Television."

"The two teleplays that we have chosen to underwrite, 'Winston Churchill' and 'Ike,' represent the highest in program quality and will bring to the people of America unique views of two of this century's most interesting and important leaders," Pace said.

In March 1946, shortly after he was defeated in a bid to remain Great Britain's Prime Minister, Winston Churchill came to the United States to deliver an address at Westminster College in Fulton, Mo. That celebrated "Iron Curtain" speech — warning Americans about the dangers of Soviet expansion — eventually defined the Cold War.

Following that address, which many historians consider his finest postwar oration, Churchill delivered a series of informal talks across America.

"Winston Churchill" is a dramatization of one of those

talks, spiced with wit and humor, as Churchill — portrayed by actor Robert Hardy — looks back on his career, its successes and failures and the leading political figures he knew.

Robert Hardy has had a long and illustrious career in theater, films and television. He has appeared on London's West End stages in such productions as "Much Ado About Nothing," "The Rehearsal," "The Constant Couple," and Jerome Kilty's story of the long-running affair between George Bernard Shaw and Mrs. Patrick Campbell, "Dear Liar."

On television, Hardy has been in "David Copperfield" and "Edward VII," among other series, and his film roles include "The Spy Who Came in From the Cold" and "Young Winston." He portrayed Churchill in the Masterpiece Theatre presentation of "Winston Churchill: The Wilderness Years."

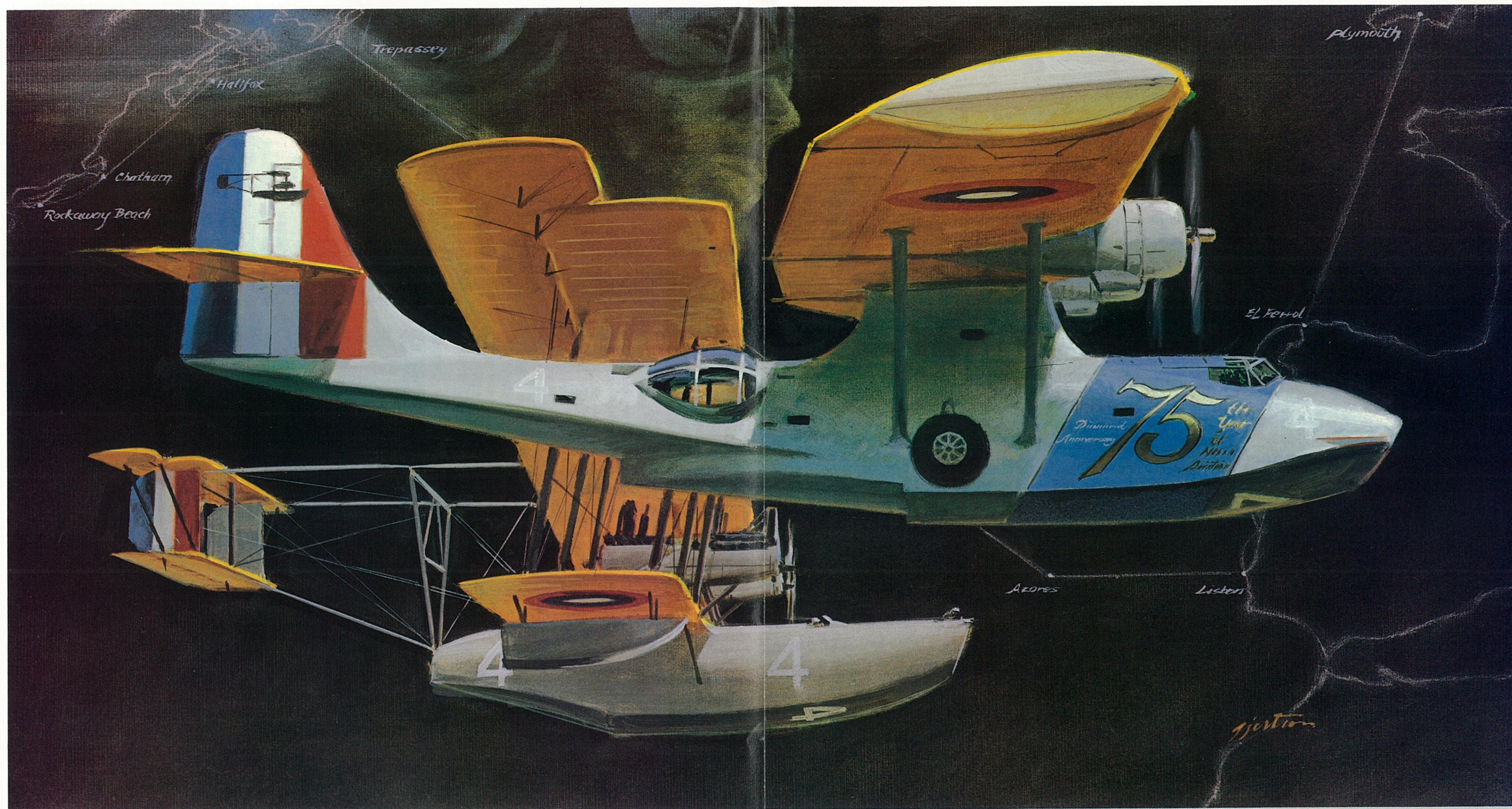
"Winston Churchill" writer James C. Humes first met his subject in 1953, commencing a fascination with the former Prime Minister which led to his prize-winning

biography, "Churchill: Speaker of the Century." That book generated a series of lectures in 36 states and eight nations which was eventually fashioned into the play.

In "Ike," acclaimed actor E. G. Marshall will portray the multifaceted Dwight D. Eisenhower, whose career spanned service as a five-star general and Supreme Commander of the Allied Forces during World War II, President of Columbia University and two terms as President of the United States.

Executive producer David Susskind, host of "The David Susskind Show," television's longest-running show, has produced such television classics as "Hallmark Hall of Fame," "Death of a Salesman," "The Diary of Anne Frank," "Of Mice And Men," "The Glass Menagerie" and "A Moon for the Misbegotten," among countless other prestigious specials.

For "Winston Churchill," David Susskind is executive producer. The producer is Diana Laptook and the director is Charles Jarrott.

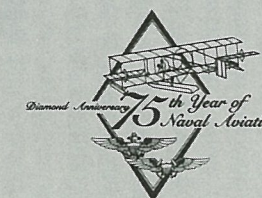


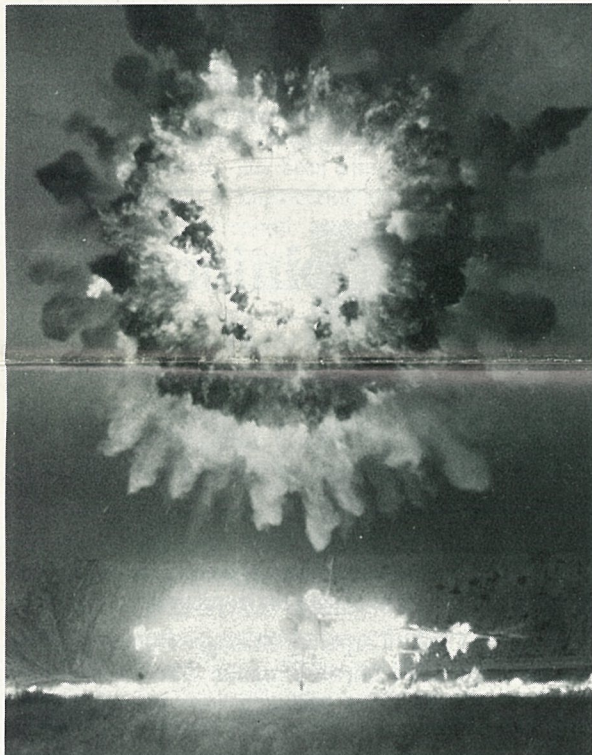
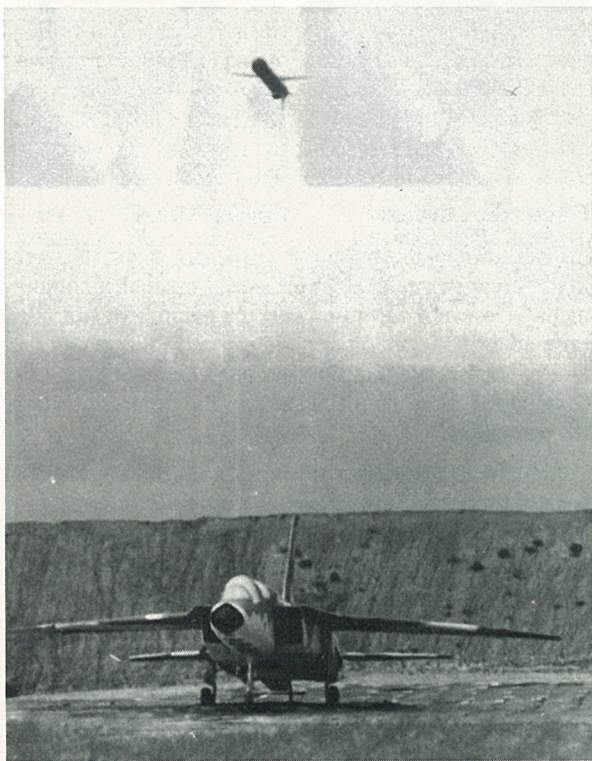
On May 16, 1919, a trio of U.S. Navy flying boats left Trepassey Bay, Newfoundland, to attempt the first successful trans-Atlantic crossing by airplane. After a fifteen hour flight to the Azores and a ten day layover there, the NC-4, commanded by Lieutenant Commander Albert C. Read and piloted by

Lieutenant Junior Grade Walter Hinton and Coast Guard Lieutenant Elmer Stone, reached Lisbon, Portugal, at dusk on May 27.

As part of the celebration of the 75th Anniversary of Naval Aviation, the flight of the NC-4 is being retraced by another veteran of naval service, a World War II PBY Catalina

patrol bomber. The PBY was designed and built by Consolidated Aircraft, now the Convair Division of General Dynamics in San Diego. The reenactment is being underwritten by a grant from General Dynamics Corporation to the Naval Aviation Museum Foundation.





Cruise Missile Success. In a first-of-its-kind test, a Convair-built Tomahawk land-attack cruise missile comes in low over a simulated revetment and explodes in an airburst to destroy its target — a parked aircraft. The Tomahawk was launched from a submerged submarine off the California coast and, after a flawless flight of 474 miles, overflew and attacked its target from an altitude of less than 100 feet, according to a Navy spokesman.

Fort Worth Receives Go-Ahead to Produce 40 F-16s for Greece

Fort Worth recently received the go-ahead to produce 40 F-16C/D aircraft for Greece. Deliveries are scheduled to begin in the fall of 1988.

The sale is based on a firm fixed-price, direct contract with the Government of Greece rather than the usual Foreign Military Sales contract with the U.S. Air Force. Under this arrangement, which is the first non-FMS F-16 international sale, General Dynamics is responsible for virtually all aspects of the aircraft and program, including the total logistics support task.

Engines, however, will be furnished by the Government of Greece, which will select either the upgraded Pratt & Whitney or General Electric F-16 engine in a competition that is now in progress.

There is a potential for a follow-on order of 20 additional F-16s by the Greek Government.

Pace Tells Shareholders New Contract Awards Assure Steady Production for Key Programs

Chairman Stanley C. Pace said at the annual meeting of shareholders May 1st in Wichita, Kan., that the company in the first quarter of 1986 received a number of important government contracts that will provide continued steady production for several major programs.

"We have made satisfactory progress to date," Pace said, "in meeting the requirements of the agreement reached with the Department of Defense on Feb. 7th, ending the contract suspension that had been in effect since early December of 1985."

"During the first quarter we were pleased by the award of several important contracts that will allow our major programs to continue at steady production levels," Pace said.



In the past three months: **Chairman Pace**

- Electric Boat was awarded a \$1.03-billion contract for all four SSN 688-class fast-attack submarines in the Fiscal Year 1986 budget. This contract is the largest single-year award the division has won in more than a decade of competition for the Los Angeles-class attack submarines. Electric Boat also received a \$587-million contract for the 13th Trident ballistic missile submarine.

- Fort Worth received a \$764 million contract for the purchase of materials in the F-16 multiyear procurement program for Fiscal Years 1987-1989. This multiyear procurement program is expected to be finalized later this year.

- Convair, for the second successive year, won the major share of Tomahawk cruise missile production, receiving a \$202-million contract for 149 sea-launched and 57 ground-launched Tomahawks out of the total Fiscal Year 1986 procurement of 345 cruise missiles.

- Pomona was awarded a \$222-million contract for 1,668 Sparrow air-to-air and surface-to-air missiles. They will be produced at Pomona's facility in Camden, Ark., and are scheduled for delivery to the U.S. Navy, U.S. Air

Force and several allies between April 1987 and March 1988.

Earlier this month, the U.S. Air Force and the Defense Advanced Research Projects Agency selected Fort Worth as one of five airframe contractors to participate in the highly advanced conceptual design work for the National Aerospace Plane. Fort Worth will be supported on this project by Convair and Space Systems.

On April 28th, General Dynamics announced that its earnings from continuing operations for the first quarter of 1986 were \$70.1 million, or \$1.64 per share, on sales of \$2.1 billion. Comparable amounts for 1985 were \$83.6 million, or \$1.98 per share, on sales of \$1.9 billion. The reduced earnings in 1986 were wholly accounted for by the recently acquired business of Cessna Aircraft Company, which has been reflected in General Dynamics' consolidated results since Oct. 27, 1985. Cessna incurred a net loss of \$17.3 million for the 1986 quarter, which included \$1.6 million amortization of acquisition cost. In addition, interest cost applicable to the funds used for the acquisition was approximately \$11.2 million (\$6.0 million after taxes) in 1986.

Net earnings, including discontinued operations, for the first quarter of 1985 were \$92.7 million, or \$2.19 per share.

Funded backlog at the end of the first quarter of 1986 was \$17.0 billion and funded and unfunded backlog totaled \$23.5 billion, compared to \$15.4 billion and \$22.4 billion, respectively, at the same time last year.

"The first quarter of 1986 saw continuing strong performance by three of our major defense business segments," said Pace. "The military aircraft, missiles and gun systems and submarine operations all reported earnings improvements over the first quarter of last year."

"As we said at the time Cessna was acquired, we expected no significant upswing in the general aviation industry any time soon," Pace said. "We are confident, however, that Cessna, with its superb lines of business and utility aircraft, is in a strong position for the long term."

(See related story on Page 8)

Company Will Solicit Employees' Opinions In Survey Scheduled to Begin in the Fall

Starting in the fall, General Dynamics will conduct a companywide survey of employee opinions on a broad variety of aspects of company performance and their individual jobs.

"This project is intended to give our employees the opportunity to provide their observations, thoughts and feelings about their company, its performance, policies and procedures, work environment and other matters," said Chairman Stanley C. Pace.

The company has engaged the services of Sirota and Alper Associates, Inc., a consulting firm, to conduct the survey. Between now and September, representatives of Sirota and Alper will be visiting all of the company's divisions and subsidiaries to familiarize themselves with the company's operations.

During these visits, they will meet with a cross section

of salaried and hourly employees in order to obtain insights into companywide and local issues that will form the basis for one or more questionnaires that will be prepared specifically for the General Dynamics survey.

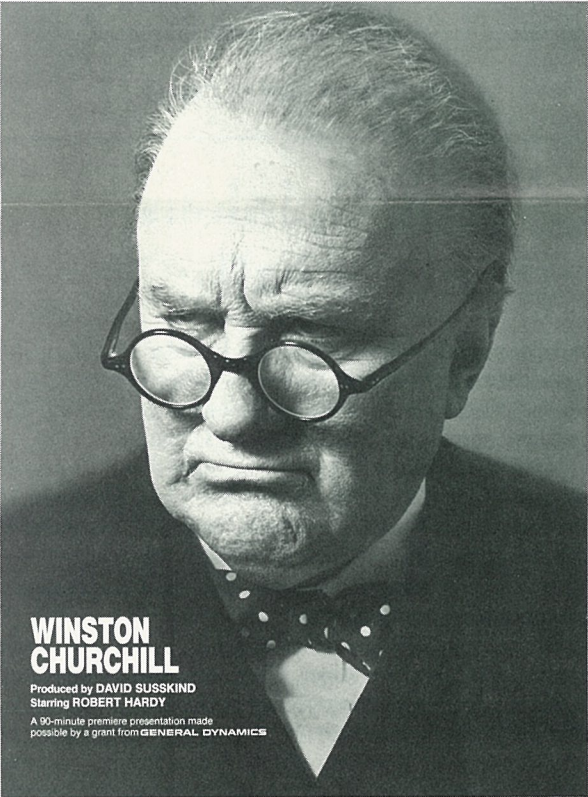
"Results of this survey will be shared with all employees," Pace said, "and will provide a base from which the company can address concerns. Individual anonymity will be safeguarded through all steps of the process, and none of the information will be used to audit the performance of individual employees."

Sirota and Alper Associates, Inc., headed by David Sirota and S. William Alper, is a management consulting firm specializing in employee attitude research. Since its founding in 1972, it has surveyed more than half a million

(Continued on Page 2)



New Museum Attraction. A photo by The Norwich (Conn.) Bulletin shows *Nautilus*, the world's first nuclear-powered submarine, resting at her berth at Groton, Conn., where she is the centerpiece of a new naval museum. The retired submarine now is a national monument. (See story on Page 2)



Churchill Revisited. Actor Robert Hardy strikes a typical Churchillian pose (top photo) in his portrayal of the distinguished British Prime Minister in a national public television program underwritten by General Dynamics. The program, "Winston Churchill," will be telecast on Wednesday, June 18th, and advertisements like the one above (bottom photo) will appear in 16 regional editions of TV Guide on June 14th. Local listings should be checked for exact time and channel as these will vary by regions. The magazine's 16 regional editions have a total circulation of 7,870,000.

Hahn Air Base Wing Gets Its First F-16C/D Aircraft

The U.S. Air Force's 50th Tactical Fighter Wing at Hahn Air Base, West Germany, officially began its conversion to F-16C/D aircraft in April after flying F-16 A/Bs since 1982.

The wing's 496th Tactical Fighter Squadron received the first F-16C/Ds at Hahn. Two additional squadrons are scheduled to begin their conversions later this year.

Hahn became the second USAF F-16C/D site in Europe. Ramstein Air Base, West Germany, activated a squadron with advanced Fighting Falcons late last year.

Nautilus, First Nuclear-Powered Submarine, Now Is a Naval Museum Attraction

by Jim Reyburn

The Electric Boat-built *Nautilus*, the grand old lady of the U.S. Navy's nuclear submarine fleet, began a new career last month as a national monument and as the centerpiece of the nation's newest museum.

The world's first nuclear-powered submarine floated at her Groton, Conn., custom-built pier April 21st in front of 1,500 people gathered for dedication ceremonies of the \$7.9-million *Nautilus* Memorial/Submarine Force Library and Museum.

The museum lies on the bank of the Thames River just below the Submarine Base about two miles north of Electric Boat, where *Nautilus* took shape 31 years ago.

"It's a great day for Connecticut, it's a great day for you former crew members, and it's a great day for the United States," said Connecticut Gov. William O'Neill, who noted the ship's peaceful 25-year record.

"That ship was built for war," Governor O'Neill said, "but, oh, how fortunate that she sailed in peace."

Adm. Kinnaird McKee, Director of the Navy's Nuclear Propulsion Program, called the ship an example of naval weapons development at its best. Admiral McKee praised his predecessor, Retired Adm. Hyman Rickover, who spearheaded the effort to get the *Nautilus* built, saying "He had no team, no funding. He just had a gleam in his eye."

The ceremony was marked by the presence of many former *Nautilus* crew members, including Retired Vice Adm. Eugene Wilkinson, the first Commanding Officer, who termed her "a winner in whatever she did" and said that her most important contributions "were the officers and men that she trained in everything nuclear."

James Norris, who was a chief sonar technician on the *Nautilus* from 1957 to 1961, said, "The reason the *Nautilus* has so much magic is that only six percent of the Navy was in submarines back then and only one percent of those was chosen for the *Nautilus*."

Former Connecticut Gov. John Dempsey, who, as project chairman, has led fund-raising efforts for the



Former Gov. Dempsey



Admiral McKee

project since its inception five years ago, called the opening "a dream come true for me since I made that commitment." Governor Dempsey said the committee still must raise about \$2.5 million in private contributions — about half of the private contribution goal. General Dynamics contributed more than \$700,000 to the program early in the campaign.

Nautilus had returned to the area on July 6, 1985, to become part of the museum as the star attraction in a triumphant parade up the river. Stripped of her propulsion system that had signalled the start of a new era, she had just completed a 5,000-mile, month-long tow from Mare Island, Calif.

Launched on Jan. 21, 1954, before a crowd of 30,000 people, the 320-foot ship went on to log more than a half million miles during a distinguished 25-year career, shattering every submarine record — including speed and endurance — ever recorded.

Nautilus and the museum are expected to attract more than 400,000 tourists in their first year of operation. Admission is free and the museum is open every day but Tuesday from 9 a.m. to 5 p.m.

Company Will Solicit Employees' Opinions In Survey Scheduled to Begin in the Fall

(Continued from Page 1)

workers and managers for many of America's major corporations and government agencies, such as IBM, Burroughs, Honeywell, Monsanto, General Motors, Ford, CBS, Department of Defense, Internal Revenue Service and many cities and states.

"The major objective of the survey is to provide General Dynamics management with the information it needs to monitor and improve the human side of organization effectiveness," Sirota said.

"The overall survey process and design will be tailored to General Dynamics' needs, objectives and resources," he said. "Based on the orientations and interviews, survey instruments will be developed to meet the specific needs of the company and its major divisions," Sirota said.

"We do not use a 'canned' questionnaire, but one that asks specific questions about a company's policies, practices and programs in language that employees will know and recognize," Sirota said.

During the organizational phase, company participants will be informed about the survey process and what kind of information will be sought in the program.

Mary F. Cook, Corporate Manager-Human Factors, has been appointed Survey Program Director, and divisional coordinators have been appointed at each location to assist with the survey locally.

Employees will be kept informed of the progress of the program through periodic updates in General Dynamics World. Other methods of communications, such as bulletin boards, newsletters and meetings, will also be utilized.



Survey Program Manager Mary F. Cook Conducts Planning Session for Division Coordinators

Carl G. Miller Is Named VP of Finance, Controller At Cessna Aircraft Co.

Carl G. Miller, a veteran of 12 years' experience in financial assignments with General Dynamics, has been appointed Vice President of Finance and Controller for the Cessna Aircraft Company.

Miller, 43, joined General Dynamics at the Corporate Office as Supervising Auditor in 1973 and later held positions as Manager of Financial Planning-Aerospace, Manager of Financial Planning-Marine, Corporate Director of Financial Planning-Commercial and Corporate Director of Financial Planning-Marine.

In 1980, he was named Division Controller at Quincy Shipbuilding and, in 1983, was named Division Vice President and Controller at Quincy.

Before coming to General Dynamics, he was Manager of Ahrens & McKeon, Certified Public Accountants, in St. Louis from 1966 to 1973. Miller received a Bachelor of Science degree in Commerce from St. Louis University in 1964.



Miller

Gordon England Appointed Division Vice President, Research and Engineering

Gordon R. England, former Director of Avionic Systems at Fort Worth, has been appointed Division Vice President-Research & Engineering at Land Systems.

England joined General Dynamics in 1966 and worked on various hardware and software systems for F-111 aircraft in his early years with the company. Later, as a project manager in the early stages of the F-16 program, he had technical responsibility for the development and flight testing of F-16 avionic systems.

England holds a Bachelor of Science degree in Electrical Engineering from the University of Maryland and a Master of Business Administration degree from Texas Christian University. He has written articles for a number of industry and technical journals and has served on a wide range of panels, including the National Research Council/Air Force Studies Board.



England

Savings and Stock Investment Values

	Annual Rate of Return for the 12 Month Period Ending:	
	Feb. 28, 1985	Feb. 28, 1986
Salaried		
Government Bonds	9.3%	17.0%
Diversified Portfolio	27.5%	35.8%
Fixed Income	12.4%	12.3%
Hourly		
Government Bonds	9.3%	16.4%
Diversified Portfolio	27.2%	35.8%
Fixed Income*	N/A	12.4%
GD Stock Closing Price	\$79.25	\$76.62

* Fixed Income effective 6/30/85

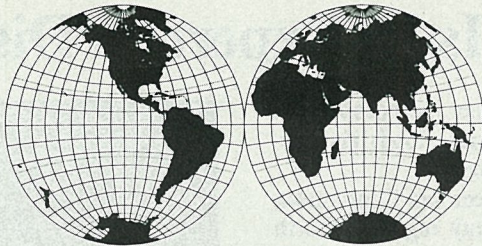
GENERAL DYNAMICS

World

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Dean Humphrey, Jack Isabel, Jerry Littman,
Evelyn Murphy, Jack Price, Jim Reyburn, Bill Sheil,
Joe Stout, Bob Sweeney, Z. Joe Thornton



Around the World

CHQ: Marcia J. Wooddell joined as Corporate Financial Analyst . . . Clyde E. Gooch and Howard L. Moore as Senior Auditor . . . Kurt W. Hansen as Corporate Langley Representative . . . Mark F. Jolly as Supervising Senior Auditor . . . Karla M. Meyer as Auditor . . . Don W. Thompson was appointed Aerospace Systems Corporate Director . . . David J. Kray was promoted to Corporate Manager-Office Systems . . . Danny H. Sokolowski to Corporate Manager-Telecommunications . . . Nancy L. Fronckewicz to Corporate Administrator International Administration . . . Barbara J. Stuart to Corporate Personnel Representative.

Fort Worth: Johnny Alvarez was promoted to Field Service Engineer . . . Alan M. Arabian, Charles E. Doyle Jr., Earl A. Taylor Jr. and Earl W. Turns to Project Engineer . . . Victor R. Attard and John R. Blankensop to Senior Quality Assurance Engineer . . . John E. Babb and Andrew C. Lay to Engineering Chief . . . Darryl G. Betts and Otto F. Karrenbrock to Senior Program Analyst . . . Patrick D. Bobbitt and Donald Chadwick to Manufacturing Control General Supervisor . . . David J. Brown, Arthur R. Forsyth III and David E. Glidewell to Financial Supervisor . . . Gene Brown, Walter R. Garrett, Duncan D. Guest, James Lefan, Billy R. McGrew and Paul E. Painter to General Foreman . . . Charles Bundschu III to Manufacturing Control Coordinator . . . Earl H. Burnam to Engineering Administrative Manager . . . William M. Caracciolo to Industrial Engineering Supervisor . . . Calvin S. Chesshir to Engineering Specialist . . . Bobby R. Clanton, Raymundo O. Escamilla, Noyel D. Gant, Robert D. Honea, Jack R. Imes, Charles B. Kilgore, Walter E. Maxwell, Marjorie A. Ransom, Ivin N. Samuels, Janet L. Stovall and Silvino M. Suarez to Logistics Group Supervisor . . . Carroll L. Crandall Jr. to Quality Assurance Management Specialist . . . John H. Fee, John S. Hay Jr., Malcolm C. Russell and Danny Stuckler to Material Program Administrator . . . Clarence L. Galler to Subcontract Management Coordinator . . . James A. Gordon to Engineering Program Manager . . . Gary B. Hargis to Manufacturing Engineering Specialist . . . James D. Hill Jr. to Subsystem Cost Coordinator . . . George F. James Jr. and Glenn H. Reue to Assistant Project Engineer . . . Louis A. Jarrett to Purchasing Agent . . . William T. Kaarlela to Quality Assurance Manager . . . Howard W. Kaker to Senior Manufacturing Engineering Specialist . . . Warren A. Lambert Jr. to Logistics Specialist . . . Julie K. Lunsetter to Project Coordinator . . . Bill D. Neal to Human Resources Chief . . . Vincent Panzera to Program Specialist . . . Yvonne Pollard to Engineering Group Supervisor . . . Donald S. Rawlins and Homan L. Rupert to Quality Assurance Chief . . . Robert A. Stevens to Chief Project Engineer . . . Michael D. Tilton to Production Specialist . . . Ellis S. Turner to Procurement Chief . . . Melvin L. Westcott Jr. to F-16 Production Manager-Turkey . . . Milton A. Whiting to Tool Manufacturing General Foreman . . . Brian R. Wilson to Industrial Engineer . . . Kirby W. Wood to Traffic Administration Supervisor.

Land Systems: Charles J. Stieber was appointed to Division Ethics Program Director . . . John N. Watters to Financial Administration Director . . . Samuel R. Moore was promoted to Security Chief . . . John E. Vettori to Skilled Trades Maintenance Foreman . . . Martin N. Simluk to Production Procurement Chief . . . Norman P. Galaska to Material Planning and Control Supervisor . . . John G. Petty to Division Competition Advocate . . . Dennis M. Hickmott to Financial Planning Manager . . . Bruce D. Caldwell to Group Engineer . . . Donald W. Ishmael Jr. to Production Planning Supervisor . . . Jean K. Pfister to Program Management Chief . . . Norman S. Dyer to Assistant Program Manager . . . Alan J. Stallard, Richard L. Carr and William V. Petere to Engineering Supervisor . . . Arthur C. Weber to Engineering Chief . . . William A. Potrafke to Principal Engineer . . . Lynn L. Maker to Procurement Chief.

Convair: Michael L. Baffone Sr. and Richard A. Oswald were promoted to Manufacturing Control Operations Supervisor . . . Mark J. Keller to Art & Editorial Supervisor . . . Mickey E. Nicolet to Plant Services Operations General Supervisor . . . Robert J. Ross to Procurement Chief . . . Donna L. Shuffler to Manufacturing Material Control Operations General Supervisor.

Space Systems: Robert J. Moberly was appointed to Program Development Administration Director . . . Charles Allen Jr., Kenneth J. Stohr and Richard W. Hattings were promoted to Finance Manager . . . Roberta C. Baade to Training and Development Manager . . . David A. Baxter to Financial Supervisor . . . Harold G. Bradley, Homer S. Maynard, Murray Ogman and Anthony J. Vasques to Group Engineer . . . Brian W. Dodds to Manufacturing Operations Supervisor . . . Michael C. Gass to Facility Planning Chief . . . George E. Johnston Jr. to Division Planning Manager . . . Kenneth C. Nuss to Engineering Chief . . . David A. Swanson to Group Supervisor.

Pomona: James L. Davis and John R. Smith were appointed to Marketing Director . . . Lloyd R. Borowski and Sydney L. Torrey were promoted to Project Representative . . . Kenneth N. Brown to Senior Project Engineer . . . James L. Burns to Systems & Procedures Chief . . . Dana D'Artenay and Nancy S. Fredrick to Industrial Relations Administrator . . . Steven A. Denning to Proposal Development Specialist . . . George W. Evans Jr., Richard M. Fults, William M. Hatafsky, John F. Herold, Ranapratap Lavu, Burton L. Paikoff, Gary D. Poff and James E. Riley to Group Engineer . . . Frank D. Gallegos to Inspection Supervisor . . . Perry R. Huyck to Engineering Group Supervisor . . . William L. Kliefoth to Section Head . . . Gary R. Posthuma to Senior Facilities Specialist . . . Richard D. Alderson to Procurement Management Administrator . . . Joe M. Beck, Robert L. Quinn and Louis H. Soliz to Production Control Supervisor . . . Charles E. Cartwright and Joseph A. Mecca Jr. to Manufacturing Control Chief . . . Raul N. Casillas and Thomas Zichichi to Manufacturing Group Engineer . . . Alice F. Fordan to Project Coordinator . . . Merrill W. Gordon Jr. and Robert D. Sims to Project Engineer . . . Merlene R. Kastner to Legal Department Administrator . . . Richard L. Majeski to Senior Quality Control Engineer . . . Robert W. Muir to Material Control Supervisor . . . Ricky L. Riley Sr. to Production Support Chief . . . Roger L. Rinier and Darryl C. Stierna to Manufacturing Supervisor . . . Kenneth W. Rowe to Manufacturing Development Specialist . . . Marion K. Wells to Senior Quality Assurance Specialist . . . Daniel A. White to Plant Engineering Supervisor. At Camden, Kenneth F. Bevill to Quality Assurance Supervisor . . . John R. Bowles and Robert C. Jackson to Assistant Engineer . . . William C. Doyle to Cost Control Specialist . . . Delores E. Estes to Documentation Control Supervisor . . . Linda M. Fogle to Administrative Accountant . . . James F. Gray to General Supervisor . . . Dorothy J. Green and Betty L. Smith to Engineer Planner . . . Carl W. Hudson to Engineer Manager . . . Samuel L. Purifoy, Betty S. Roundtree and Edith D. St. John to Manufacturing Supervisor II.

Valley Systems: Raymond R. Smith was appointed to Product Line Director . . . Joe P. Harrison to RAM Systems Engineering & Field Operations Director . . . Barbara T. Aviani was promoted to Publications Group Supervisor . . . William J. Bereki to Human Resources Administrator . . . Mark V. Cvikota to Staffing Administrator . . . Raymond A. Dibrell to Engineering Manager . . . Willis L. Fagg to Program Manager . . . Robert S. Frost to Project Engineer . . . Richard L. Herin to Manufacturing Development Specialist . . . Francis L. LeRoy to Staffing Chief . . . Marion C. Renner to Project Representative . . . James F. Taylor to Manufacturing Control Manager . . . Jacqueline L. Unciano to Accounting Supervisor . . . Dennis L. VanZant to Material Control Supervisor . . . James R. Womack Jr. to Production Support Manager . . . Anthony Alvarez and William J. Grief to Section Head . . . John D. Baker to Senior Quality Assurance Specialist . . . Dennis W. Blay to Engineering Manager . . . Charles F. Carnett to Project Administrator . . . Nancy B. Como to Accounting Coordinator . . . Patricia C. Donovan to Administrative Accountant . . . James W. Duncan, James F. Gerdes and Derek A. Low to Estimating Specialist . . . Jack R. Face and George M. Wysup to Section Head . . . Barbara A. Gooch to Cost Control Administrator . . . Gary L. Hagedon to Senior Project Engineer . . . Dale W. Hawley to Manufacturing Test Engineer . . . Candace J. Heth to Inspection Supervisor . . . Urban G. Keil Jr., Tommie D. Rhoades and Harold K. Whitelock to Group Engineer . . . Daniel S. Kuz to Manufacturing Group Engineer . . . William P. Mondiek to Logistics Specialist . . . Julie R. Nesbitt to Principal Maintenance Engineer . . . Jan S. Snyder to Engineering Specialist . . . Marilyn A. Thomasson to Administrative Accountant . . . Richard H. Swetnam to Principal Field Service Engineer.

Data Systems: At Western Center, Paul H. Bernstein and Earl R. Oudejans were promoted to Engineering Software Supervisor . . . Leesta A. Bentley to Senior Publications Coordinator . . . Jeanette L. Garvin to Computer Trainer. At Central Center, Joseph L. Breal to Data Administration Chief . . . George W. Williams to Operations Services Chief. At Eastern Center, Walter O. Clauson and Anthony L. Matthews to Engineering Software Supervisor.

GDSC: Charles R. Wiseman was promoted to Engineering Supervisor . . . Claude C. Barnes to Human Resources and Personnel Support Services Supervisor . . . Edward T. Weston and Andrew J. Chasko to Engineering Specialist . . . Albert R. Farebrother to Senior Logistics Systems Analyst . . . Domnick Travis to Senior Scheduling Specialist . . . John C. Sharp to Business Development Analyst.

Ray E. Cartier Is an Expert on Disasters for the American Red Cross

Fort Worth employee Ray E. Cartier has become well acquainted with the aftermaths of fires, floods and tornadoes and puts his knowledge to good use.

As an American Red Cross volunteer and Coordinator of Disaster Volunteers for a 19-county region of north Texas, Cartier has turned some of his experiences and lessons learned from relief projects into sound-and-slide shows which have been used to teach members of other organizations how to deal with such situations.

For example, when heavy rains caused flooding and many home losses in 13 Texas counties in 1981, Cartier spent nine days assisting the victims. He took photographs throughout the effort and later created a presentation that has been used in training disaster volunteers from 60 different organizations in three states.

In 1982, Cartier and his wife, Karen, assisted the homeless after a tornado devastated many residences in Paris, Tex. In 1983, he drove a Red Cross relief van to Fort Wayne, Ind., to help flooding victims there.

Last August, he worked with families of the dead and injured after the crash of a commercial airliner at Dallas/Fort Worth International Airport. Earlier this year, he assisted the homeless after a fire destroyed 47 units of an apartment complex in Arlington, Tex., the Fort Worth suburb where he lives.

Cartier and other Red Cross volunteers frequently work alongside firefighters and police officers, helping to get people's lives back to normal after such a disaster. "The emergency services personnel look at us as a professional group. They know we're not going to get in the way," he said.

Cartier has been involved with the Red Cross for more than six years. He said he first became aware of the organization's value, and then volunteered after taking a Red Cross first aid course. "I realized how much good volunteers can do with their determination; they are there simply because they want to be," he explained.

He said he volunteered to work in disaster relief because he feels it is important that someone be on hand at crisis scenes to deal exclusively with human needs. "There is always someone there to make the natural gas and electrical utility hookups safe and to begin the cleanup. The role of the Red Cross is to look after the people," he said.

The region that Cartier's organization serves has a population of more than 1.2 million.

The more routine duties Cartier has as Disaster Volunteer Coordinator include training and preparedness planning. When disasters occur, he provides food, arranges



Ray Cartier, an American Red Cross Volunteer, Demonstrates Cardiopulmonary Resuscitation Technique

temporary housing and sees that victims' other needs, such as clothing and furniture, are met. "We give the victims what they need to get started immediately in life again," he said.

He also performs damage assessment surveys and provides information to governmental agencies, which use it in determining if areas qualify for financial assistance. "Whenever there is a disaster and you hear accounts of how many people were displaced, those figures come from volunteers like us," he said. As required by the American Red Cross, an initial survey, or "windshield" assessment, is made while driving through the area in an automobile within 24 hours after the damage occurs. A more detailed survey is then conducted by going from door to door and asking questions.

Cartier teaches courses in damage assessment, mass care and shelter and cardiopulmonary resuscitation (CPR). In addition, he keeps his own training current by receiving about 60 hours of instruction a year.

Cartier and his wife are sometimes awakened at 3 or 4 o'clock in the morning to go to disaster scenes. "The first thing I do is start heating water for coffee," he said. "The Red Cross is known among police and fire officials for the

coffee and doughnuts we bring to other disaster workers, as well as to victims. However, that's only the first step. The real work follows."

"The Red Cross is the only organization mandated by Congress to participate in the relief of human suffering in a disaster, through legislation passed in 1905," Cartier pointed out.

In addition to their other activities, the Cartiers publish a newsletter for stamp collectors and occasionally work as disc jockeys at dances, mostly playing music of the 1950s. Proceeds are donated to the Red Cross.

They also enjoy traveling and plan to visit their 50th state this year with their sons, ages 19 and 20, and 11-year-old daughter. The family's travels have also covered several foreign countries.

In fact, Cartier took his initial first-aid course in preparation for a camping trip to British Columbia, Canada. "I assumed that if one of the kids ever fell out of a tree and broke an arm or something, it would happen out in the wilds," he said.

When not working on disasters throughout north Texas, Cartier works full time as Technical Buyer in Fort Worth's Material Department.

Electronics Marks Tenth Anniversary Of 1st ATE Contract

On Mar. 12, 1976, after an extensive industrywide competition, the Electronics Division was awarded the first full-scale-development contract for the Avionics Intermediate Shop (AIS) Automatic Test Equipment (ATE) for the F-16 built by the Fort Worth Division.

In the 10 years since that first contract, Electronics has delivered 217 test stations worldwide, and the division has orders for 43 more stations through the third quarter of 1987.

A complete F-16 AIS consists of four test-station types, a number of Fort Worth-supplied Interface Test Adapters and the computer software necessary to test the stations, the test adapters and the aircraft's Line Replaceable Units. Trained Air Force technicians use the system to isolate faults and repair avionics units quickly, maintaining the high mission-capability rate for the F-16.

The most recent figures show a mission-ready status of 88.8 percent for the F-16, highest of any fighter aircraft in the U. S. inventory.

The first versions of the stations were utilized in the AIS for the A and B models of the fighter, and Electronics delivered the last of 174 stations of this type in October 1984, supporting the airplanes in the air forces of nine nations.

Since December 1984, Electronics has been delivering test stations with enhanced test capability to support the new systems on the F-16C/D aircraft. These new stations also support the older models.

Present Air Force plans call for a total of 427 stations, a number which could rise as new customers and applications of the versatile aircraft develop.

Of the 42 F-16C/D stations delivered to date, 24 were found to have zero defects by company and Department of Defense inspectors.



Artistic Rendition. Edmund F. Freeman, an engineer in Land Systems' Product Design Liaison Engineering, displays a painting of the M1 main battle tank created by his daughter, Barbara, whose professional name is Silver Johnson. The artist, who lives and works in Anchorage, Alaska, specializes in nature and wildlife in both contemporary and abstract styles. She got the idea for the M1 painting six years ago while touring the Detroit Tank Plant with her father. The painting will be displayed at several Land Systems facilities before being retired to Freeman's home.

Detroit Tank Plant Family Helps Build Foreign Churches

A family of three Detroit Arsenal Tank Plant employees devotes its time, resources and skills toward the building of churches in foreign countries.

Auda Damron, Maintenance, his daughter, Cheryl Reich, Quality Control Gage Laboratory, and his son-in-law, Gary Reich, Test and Accept, receive no financial compensation for their missionary effort; in fact, it costs them money.

Damron estimates that it takes about two years of savings to finance the required transportation, food, building materials and supplies to travel to a foreign country and construct a church there. The Damron clan has helped to build churches in Costa Rica, Haiti, Peru and Nicaragua. Their next project is in Brazil.

The Damrons participate in the project as part of the Eastern Michigan District Work and Witness Team, sponsored by the World Missionary headquarters of the Church of the Nazarene located in Kansas City, Mo.

Each volunteer contributes \$1,000 toward the purchase of building materials and supplies. Land is donated or purchased in the host country. The team members pay for their own transportation to and from the country and for their food and living expenses while there.

"We even bring our own tools," said Damron, who is an electrician.

All the team members contribute to the general construction effort with each contributing a special skill when needed. They usually work 5 days a week, 12 hours a day. The project takes from two to four weeks to complete. Accommodations range from rustic to primitive.

"The love and affection expressed by the native people more than compensates us for our efforts," Damron said. "Their outpouring of gratitude fills us with a sense of exhilaration that soon replaces the fatigue and aches and pains."

Sparrow Guidance And Control Contract Awarded to Camden

Pomona's Camden facility has received a \$222-million contract from the Naval Air Systems Command to produce an additional 1,668 Sparrow AIM/RIM-7M missile guidance and control sets plus additional wings and fins.

The Sparrow contract is the fifth to be received by the Camden facility and brings the total to be produced to 5,022, of which more than 2,000 have been delivered. Deliveries of the missiles under terms of the new contract are scheduled to begin in 1987.

The quality of Sparrow missiles reached an all-time high last year as the missiles passed both Air Force and Navy follow-on test and evaluation exercises. Many zero discrepancy missiles were among the more than 2,000 produced at the facility within the past 15 months.

Sparrow is a dual-role, medium-range, air-to-air and surface-to-air missile used by the U.S. Navy and Air Force and navies and air forces of allied nations.

Pomona began producing the Sparrow AIM-7F missile in 1976. Production of the missile was transferred to Camden in 1982 with the introduction of the improved version known as the AIM/RIM-7M. The division has produced and delivered 2,900 AIM-7F missiles to the Naval Air Systems Command.



Consolidated Vultee's New Design Could Fly and Drive

GD Flashback

Flying Car Was Designed for Salespeople By Joe Stout

Possibly one of the most unusual projects in the history of aviation and General Dynamics was the development of the Flying Car, a vehicle designed in the mid-1940s for business travel on the road and in the air. It was the dream of T.P. Hall, a design engineer at the Consolidated Vultee Aircraft Corp.

Hall envisioned the Flying Car as ideal transportation for salespeople who covered a wide territory. In its planned use, the vehicle would be flown to an airport where its wing assembly could be removed and stored, making the automobile portion available for local ground travel.

The central figure in its development was Tommy Thompson, who retired from Pomona in 1970 after a career that also included assignments at Convair and Fort Worth. He worked on the project from its beginning in a garage in San Diego until it ended shortly after a crash landing.

Thompson was employed as a mechanic at Consolidated Aircraft in San Diego from 1936 until 1940, when he joined Vultee. In 1941, he returned to San Diego and worked there through World War II. Consolidated and Vultee merged in 1943 and then merged with General Dynamics in 1954.

In 1945, he left Consolidated Vultee and went to work for Hall, who previously had left the company and had begun to make the Flying Car a reality. Thompson and two other former Consolidated Vultee employees went to work assembling the vehicle from materials that included war surplus goods.

It was made of light-gauge aluminum, with fabric-covered wings, elevators and rudder assemblies. The workers followed Hall's blueprints, which directed that the body of the car part be made first, on a frame of welded steel tubing. Since no forms or tooling were available, the parts were shaped with a rubber hammer, hammering with a sandbag so as not to damage the material. Then the pieces were smoothed with a planishing hammer.

Aluminum was then rolled into 7.5-inch diameter tubes which were used for the wing spars and tail boom. Wing ribs were fabricated by an outside contractor in Los Angeles, and the engine mount was built from steel tubing.

A 90-horsepower, air-cooled Franklin engine with in-line cylinders was used to power the airplane portion in the original prototype. The car portion was equipped with a four-cylinder engine from a 1945 Crosley automobile, installed in the rear.

The automobile's wheels were mounted on hydraulic cylinders that could take the shock of landing. The pilot — or driver — could lock them in an up position during flight to reduce wind resistance.

The wing assembly was attached to the car with three ¾-inch bolts, two in the rear and one in the front.

One day, the workers on the project were informed that the operation had been sold to Consolidated Vultee. The project was moved to the main plant at Lindbergh Field in San Diego, and the three-man assembly team was joined by employees from the company's Experimental Department. "We were given the hee haws by some of the old-timers at the plant, but we kept our spirits up and began to cover the wings and other parts that needed fabric," Thompson later recalled.

Some of the controls for the airplane were fitted to the steering wheel of the auto, and a foot pedal was installed to operate the rudder. Elevator controls were installed so as to be disengageable when the wing assembly was removed.

One day in July 1946, some members of the crew were told that they would be required to work a 24-hour shift. They worked all day and into the night, and at 5 a.m. the next day, the airplane was rolled onto Lindbergh Field for its first flight.

A Consolidated Vultee test pilot arrived at the field with Hall, and the pilot took the craft to an altitude of about 2,000 feet and made several passes over the field. "After landing on all four wheels and taxiing over to us, he rolled down the window and said, 'I like it,' " Thompson reported.

A short while later, Thompson recalled, "A highway patrolman came to the Lindbergh Field entrance and said it was either time for him to get a new book for writing tickets for flying cars, or else to change his brand of liquor."

The original prototype logged more than 100 hours of flight time in the following months. A second prototype was built incorporating features planned for the production Flying Car, including a Pratt & Whitney 190-horsepower radial aircraft engine and a fiberglass car body. The second model had an air cruising speed of 125 mph and a top speed of 140 mph. As a car, it had a top speed of about 65 mph, according to Thompson.

The vehicle received considerable publicity, as several flights were made for the press.

"One morning, a test pilot and the flight engineer wanted to make some speed and altitude checks," Thompson said. "I was on the field and asked if they needed more gas. They assured us that they would only be gone 20 minutes, and there was enough fuel for half an hour."

"After 20 minutes, we began to watch the sky for them," Thompson said. "After 30 minutes, we knew something had happened. About 45 minutes after takeoff, we received a call from Chula Vista. They had run out of fuel and crash landed in a field. The Flying Car was badly damaged, but no one was seriously hurt, fortunately."

Thompson said the vehicle was repaired and made a few more flights before Consolidated Vultee resold it to Hall. The last Thompson heard, it was in storage at El Cajon, Calif. Hall retired to New York, and the crew was transferred to work on missiles being developed by Consolidated Vultee.

Our Commitment As Employees

- *We will treat one another fairly and with the dignity and respect due all human beings.*

(From the General Dynamics Standards of Business Ethics and Conduct.)

John White Helps Students Understand the Real World of Economics

John White, a Space Systems Division contracts specialist responsible for the division's Air Force contracts on Atlas, spends one morning a week explaining the down-to-earth world of economics to students at Crawford High School in San Diego.

A recent change in California's high school graduation requirements demands that students pass a competency test on a variety of subjects, including practical economics. This requirement prompted Junior Achievement to expand its normal program to include classroom instruction in economics.

Traditionally, Junior Achievement has fulfilled its goal of providing youth with a practical and realistic understanding of America's economic and free enterprise system by helping groups of high school students establish training companies to produce and market a product. From this, students learn about market decisions, profit and loss, salaries, taxes and other aspects of business life.

In addition, outside consultants from business and industry bring more of the real world perspective to the students.

White said he was surprised at how limited the students' knowledge was of economic matters that will affect them in the future. Most of the students did not know how to balance a checkbook, and none of them could write a resume or handle an employment interview — all real world concerns just a few months away, he said.

Asked why he has gotten involved in this program, White said, "I want to give these high school students a chance to ask questions about real-life business experiences and to teach them skills which will help them in the future."

"My father is a professor at West Virginia University, and he instilled in me at an early age the importance of



Space Systems' John White Speaks to His High School Economics Class

understanding the economic system," White said. "By the age of 19 I was already working for the Department of Energy as a contract specialist during the day to help pay the cost of getting my degree at night."

"The real world is out there, and these young people have to learn how to deal with it," he said. "Besides, they need to have the chance to talk to someone in industry who can tell them what it is like and how it works."

Employees at Fort Worth Honored for Cost Reduction Savings

At Fort Worth, 257 candidates for Cost Reduction Awards were honored recently for savings contributions they made in 1985 while performing their regular jobs.

Four of the employees, representing different organizational groups at the division, were named Cost Reduction Award winners. They are: Ray Cartier, Material department; Jerry Brooks, Manufacturing and Support; Bill Hendrix, Administrative and Service, and Rick Wild, Research and Engineering.

The Cost Reduction Award program is separate from Fort Worth's Employee Suggestion Program, which recognizes employees who submit savings ideas that go beyond their usual duties.

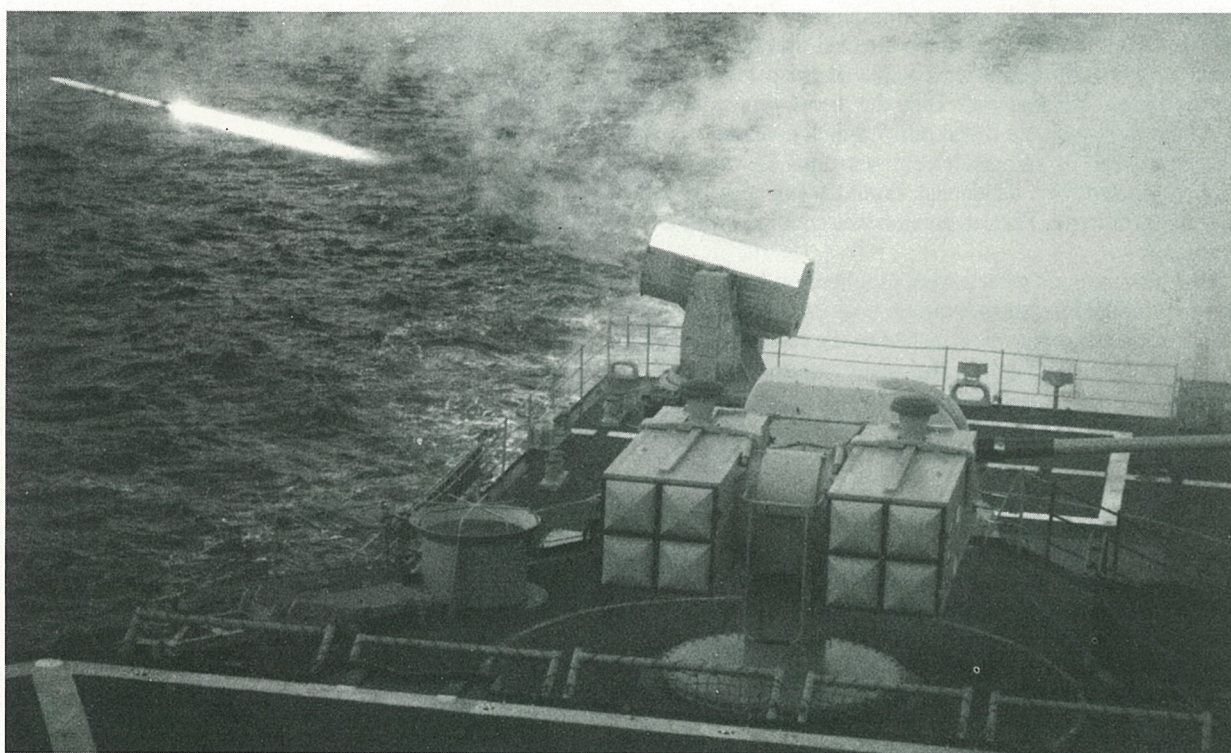
Because of a tie in the selection process, two departmental Quality Awards were presented for last year. Tom Haydon, who was General Foreman of F-16 Electrical Support and F-111 Spares Assembly during the award period, accepted a Quality Award on behalf of that group, and Bill Steelman, General Foreman of F-16 Forward Fuselage Integration and Assembly, accepted an award for his department. The Quality Award is presented to the department with the most outstanding overall quality record.

In addition, Howard Moore II, of the Forward Fuselage department, received the Individual Quality Award as the individual employee with the best quality record.

The Employee Suggestion Outstanding Promotion Award, honoring the department head who has done the most to encourage Employee Suggestion Program participation, was presented to James Plunk, Manager of Airframe Tool Design and Manufacturing.

Herbert F. Rogers, Vice President and Fort Worth General Manager, who presented the awards, also recognized 82 employees who were responsible for savings of more than \$1 million during 1985.

John D. Jackson, Manager of Cost Reduction and Value Control at Fort Worth, said the awards candidates generated total documented savings approximately equal to the cost of 20 F-16s for the U.S. Air Force.



RAM Is Fired at Sea in Test of Command and Launch System

RAM Command and Launch System Tested

In the first test at sea of the Valley Systems Division RAM (Rolling Airframe Missile) command and launch system, two RAM missiles were fired successfully from the RAM EX-31 Launcher aboard the destroyer USS *David Ray*.

The successful, dual-missile firing was conducted to demonstrate the system's capability to perform as part of the total ship system in an operational environment. No targets were involved because the primary objective was to evaluate the missile's command and launch system.

Earlier tests, both on the ground and at sea, validated the functional design and resulted in the destruction of many targets in a variety of scenarios.

A fast-reaction missile system for defense against anti-ship missiles, RAM is currently in full-scale engineering development. Planning is under way for transition to production under terms of a \$15.3-million contract awarded in August 1985 to General Dynamics by the U.S. Naval Sea Systems Command.

Donna Charity Named Space Systems' First Employee of the Year

Donna Charity, a group leader in Space Manufacturing and Assembly, has been named the first Employee of the Year for Space Systems Division.

Charity was cited for leading her department's second shift in building the new Shuttle/Centaur deployment adapter in time for a critical rotation test. She was also recognized for her efforts in training new employees in the manufacturing and assembly process.

Other Space Systems employees nominated for the award were Jess Gonzales, Senior Estimating Specialist; Fred Merino, Engineering Chief in Thermodynamics; Cecil Norwood, Quality Assurance Engineering Specialist, and David Sandsmark, Senior Financial Specialist in Space Programs Finance.

Land Systems Is Awarded U.S. Army Study Contract

Land Systems has received a \$191,000 contract from the Army's Tank/Automotive Command to study alternative designs for a new land battlefield vehicle, designated the electronic combat vehicle.

Dr. Marvin Hammond, Director of Special Projects, will be the program manager of this 12-month effort. The contract is a follow-on to the work Land Systems performed on the future close-combat vehicle study conducted in 1982 and 1984 and the long-range antitank study completed in 1985.

Land Systems will be supported in the study by Pomona and by the Hughes Aircraft Company.

General Says Quality Is Not a Buzzword In F-16 Production

Maj. Gen. Ronald W. Yates, the U.S. Air Force's F-16 System Program Director, stressed that "the demand for quality is an enduring demand," in remarks he made recently to more than 100 members of the F-16 international coproduction team in Fort Worth.

"Quality is not a buzzword," General Yates told the group at the fifth annual F-16 International Quality Assurance Conference. "To stay in business . . . you've got to meet the quality demand."

The F-16 has remained on the "leading edge" of the quality wave because quality factors have been built into the aircraft since its earliest inception, but there is always room to improve, General Yates pointed out. "Everybody associated with the F-16 (in government and industry) is proud of its quality," he said.

General Yates predicted a long production and service life for the F-16, as a result of the program's success and because of current and future constraints on defense budgeting. Since procurement of new aircraft types may be limited, "The airplane is going to be around a lot longer than people originally thought," he said.

He noted that the F-16 has the best safety record of any single-engine fighter in USAF history, and has consistently exceeded maintainability and reliability goals.

General Yates said the keys to quality in a major production program like the F-16 are good communication among the various manufacturers, good communication between the manufacturers and customer air forces, effective training for workers and strict adherence to configuration control and manufacturing instructions.

Attendees at the three-day quality conference represented 35 manufacturers of F-16 components in nine countries, four functional organizations of the USAF and five foreign air forces. The conference agenda included sessions on quality programs in each of the countries participating in F-16 parts production, as well as several sessions on specific manufacturing issues.

Herbert F. Rogers, Vice President and Fort Worth General Manager, told the conference attendees, "We can always improve, and improve we must." Today's defense manufacturing environment demands an attitude of "absolute adherence to every document, every procedure . . . to everything that finally results in quality," Rogers said.

B. Edward Ewing, General Dynamics' Vice President of Operations and Product Engineering, also addressed a session of the conference. Ewing stressed that any improvement in quality must come from "a dedication to perfection" and "a dedication to do things right the first time."

Submarine Helena Will Be Launched June 28th at Groton

Electric Boat's first launching of the year will take place June 28th when the fast-attack submarine *Helena* (SSN 725) will slide into the Thames River at Groton, Conn.

The sponsor will be Mrs. Jean Busey, wife of Adm. James B. Busey, Vice Chief of Naval Operations. Admiral Busey will deliver the principal address during the ceremony.

Helena is the first submarine and the fourth U.S. Navy ship to bear the name, in honor of the capital of Montana. Her predecessors were a gunboat, a light cruiser and a heavy cruiser.

The first *Helena*, a 250-foot, light-draft gunboat, was launched in January 1896 and served with the North Atlantic and Far Eastern fleets. She saw action in both the Spanish-American War and the Philippine Insurrection. She later was assigned to river patrol in China and was decommissioned in May 1932 and sold in July 1934.

The second *Helena*, a light cruiser, joined the fleet in September 1939. Assigned to the Pacific Fleet, *Helena* was moored at Pearl Harbor on the morning of Dec. 7, 1941, when the Japanese attacked. The ship sustained some damage but went on to participate in a number of Pacific actions before being sunk in July 1943 off the coast of New Georgia. For her exploits, she won seven battle stars.

The third *Helena*, another cruiser, was launched in April 1945 and participated in the Korean conflict, earning the first Korean Presidential Unit Citation awarded to a U.S. Navy vessel. Later, she served as the Seventh Fleet flagship until being decommissioned in June 1963.

Electric Boat has delivered 20 of the 688-class fast-attack submarines to the Navy. In addition to the *Helena*, the division has 10 more of the 360-foot, 6,900-ton ships under construction.



Ethics Awareness Training. Participating in an Ethics Awareness Workshop held for Pomona employees on May 6th are, from left to right, Wilmer B. Olson, Manager-Fabrication Quality Control; Ronald D. Orr, Manager-Final Assembly & Test Quality Control; Charles E. Seeger, Division Vice President-Product Assurance and seminar leader; Gordon R. Vanus, Manager-Process Quality Assurance & Corrective Action and Nick A. Rossman, Manager-Production Procurement. The Pomona seminar is one of a companywide series led by individuals who report to the division general managers and is attended by those employees who in turn report to the people leading the workshops. Ethics awareness training will be continued throughout 1986 in this manner until, by year-end, all General Dynamics employees will have been involved in the seminars. One central feature of all workshops is discussion among participants with the intent of identifying and examining significant ethical questions that arise in the course of daily business life.

USAF to Develop Advanced Tactical Fighter According to Packard Commission Guidelines

The U.S. Air Force will develop and acquire its Advanced Tactical Fighter (ATF) aircraft in much the same competitive way that the YF-16 prototypes were selected more than a decade ago.

Acting Air Force Secretary Edward C. Aldridge Jr., early this month said aircraft development in the ATF program will be consistent with Department of Defense acquisition initiatives and with the recent recommendations of the Packard Commission.

"The ATF is well suited to take advantage of the commission's recommendations because of the advanced technologies involved, the Air Force's commitment to tightly controlled costs and the critical need for the aircraft," Aldridge said.

The ATF, which will be deployed in the 1990s and beyond, is being designed to counter a new generation of Soviet fighters which are now being fielded in significant numbers.

Under the revised ATF plans, several contractors will be asked to build competitive prototype aircraft for what Aldridge called a "fly before buy" approach.

That approach was recommended in the Packard Commission's report to President Reagan. The commis-

sion, named after its chairman, David Packard, suggested many changes in the way the armed services buy weapons systems and support equipment.

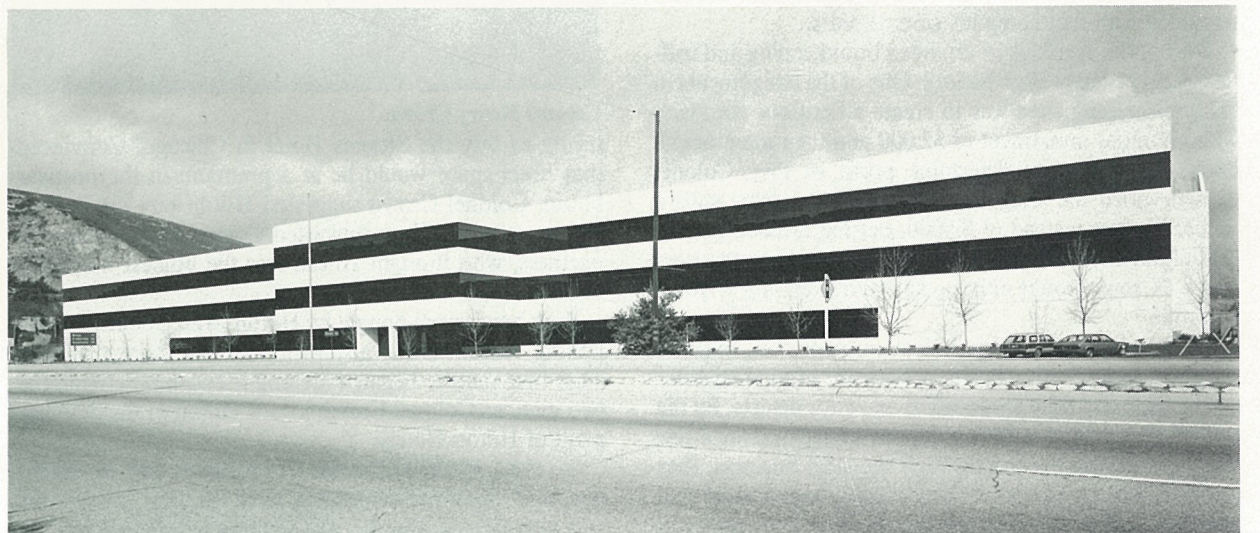
Packard was Deputy Secretary of Defense from 1969 to 1971. It was in 1972 that the USAF selected Fort Worth as one of two airframe manufacturers to build prototype aircraft for the competition. Following extensive testing and evaluation, the YF-16 was selected, and production of the F-16 was begun.

More than 1,530 F-16 Fighting Falcons have now been delivered to air forces of 10 nations and more than 2,500 remain to be delivered under current acquisition planning.

Aldridge said that by calling for competitive prototypes in the ATF program, the USAF will continue to realize the advantages of demonstrating new technologies before commitments are made for full-scale production. In addition, the USAF anticipates fielding the new aircraft in less time with lower associated costs, he said.

General Dynamics is one of seven firms to submit a proposal on developing and manufacturing the ATF.

Following a review of those proposals, it is expected that several manufacturers will be asked to build and fly their prototypes for evaluation.



New Engineering Building. The completion and occupancy of Pomona's new three-story, 240,000-square-foot engineering building was marked recently by a dedication ceremony attended by community leaders and an open house for employees and their families. The building, next to Pomona's NAVPRO facility, was designed to accommodate engineering and its administrative functions. It has more than 20,000 square feet of laboratories, plus office space for more than 1,000 engineering and research and support employees.

Company's Board of Directors Pays Tribute to Colonel Henry Crown

Col. Henry Crown, who did not stand for reelection to the company's Board of Directors, was honored by the Board with a special tribute at the annual shareholders' meeting May 1st.

Colonel Crown, who was Chairman of the Executive Committee, was cited for his major contributions to the growth and success of the corporation over many years and was elected Honorary Chairman of the Board of Directors.

A special proclamation, signed by Chairman Stanley C. Pace and John P. Maguire, Vice President and Secretary, was read at the meeting and presented to his son, Lester Crown, Executive Vice President.

The full text of the proclamation follows:

The Directors of General Dynamics Corporation on the retirement of Colonel Henry Crown as a Director and Chairman of the Executive Committee record their deep appreciation, admiration and respect for outstanding contributions to General Dynamics Corporation, its officers, employees and shareholders over a period of more than 25 years.

In his many years of service, the Colonel provided leadership, wisdom, courage and vision, not only to General Dynamics but to his country. He entered into service of the United States Army at the outset of World War II as a Lt. Colonel and a Procurement Officer in various Army districts throughout the country. His outstanding service resulted in his promotion to full Colonel, and the Army conferred upon him the Legion of Merit.

When he merged Material Service Corporation

into General Dynamics in 1959, he could not anticipate the array and magnitude of crises that lay ahead. Drawing on his tempered, half century of broad business experience, he played a crucial role in the successful restoration of the Company's financial strength. In 1966, he resigned from the Board when his family's ownership interest was purchased by the Company. He returned in 1970 after he found that the Company was again disorganized and floundering and required a complete management reorganization.

In the years of service that followed, as Chairman of the Executive Committee and as a Director, he dedicated his energies and skills toward building a strong and resourceful organization of people and facilities, always mindful of the needs and concerns of all.

He has given credit generously to others, but sought no honors or personal recognition in return. His friendship, once attained, is bonded with loyalty and trust while his modesty and quiet dignity are an inspiration to all who have had the uncommon privilege of working with him and who revere him. Compassionate and forgiving, he also required that those around him strive for the highest standards of ethical conduct. This is Henry Crown's legacy to General Dynamics.

On behalf of its members, the officers, employees and shareholders of the Corporation, the Board of Directors extends best wishes for the years ahead to a dedicated friend and a wise and faithful counsellor who is, above all, a consummate gentleman.



Colonel Crown Cited. Lester Crown (center), Executive Vice President, holds the Board of Directors' proclamation honoring his father, Colonel Henry Crown, at the annual shareholders' meeting May 1st. Also shown are David S. Lewis (left), Board member and former Chairman, and Chairman Stanley C. Pace.

Colonel Crown Greatly Influenced the Development of General Dynamics

Col. Henry Crown's eventful life began in one of the old ethnic neighborhoods in Chicago. He was born June 13, 1896, one of seven children of Arie and Ida Crown, who had immigrated to America from Lithuania in the late 19th century. His father labored ceaselessly to support his large family, working as a traveling peddler, as a foreman in a suspender factory and as a distributor for the Diamond Match Company.

Colonel Crown learned early to accept disappointments as part of the family's struggle for survival. When he was graduated from Burr Elementary school in 1910, he could not afford the 50 cents required to buy his graduation photograph. Nearly 50 years passed until, by a chance meeting with the wife of a former classmate, he finally obtained a faded, worn photo of that event.

After finishing elementary school and feeling that he had to contribute to the support of his younger brothers, he worked as a newspaper and telegram delivery boy. His oldest brother, Sol, had been working several years for the Chicago Firebrick Company and when Sol became sales manager, he hired Henry as a shipping clerk.

The youth rose at 4 a.m. to be at work by 5 a.m. During his second week on the job, he mistakenly dispatched two loads of sand to a construction site where the contractor had ordered one load of sand and one of gravel. A complaint from the contractor to the president of the company caused his dismissal.

To find another job in that difficult period, he painstakingly wrote 30 to 40 letters to various companies whose names he had gotten from newspapers, addressing his letters to the company presidents. There were only two responses, but one of them produced an interview and a job with the Union Drop Forge Company. He started in its traffic department in 1911 when he was 15 years old and remained with that company several years.

During the evenings he attended bookkeeping and traffic classes at Tuley High School. One of the assignments in his bookkeeping class was to create a fictitious company with an initial investment of \$2,000 and then maintain its books for a year to determine profit or loss. Colonel Crown varied the assignment slightly by starting with a million dollars instead of \$2,000, netting a much greater profit than anyone else in the class. His instructor observed wryly, "Crown, you're either going to make it big or you'll go broke."

In 1916, Colonel Crown and his brother, Sol, began a small steel distribution business when they found customers for the extra rolls produced to allow for defects. By the end of World War I, with a capital investment of a few thousand dollars earned through the steel business, they founded Material Service Corporation, buying sand and gravel in carloads and delivering them to contractors at job sites. Their enterprise was barely begun when it was discovered that Sol had tuberculosis. His condition slowly worsened, and in 1921 Sol Crown died at the age of 27.

When World War II began, Henry Crown entered service as a lieutenant colonel and a procurement officer in the

U.S. Army Corps of Engineers. For his achievements in purchasing more than a billion dollars in materials and equipment in the next few years, the Army promoted him to colonel and awarded him the Legion of Merit.

The anguish of these war years for the nation was further shadowed for him by the death of his wife, Rebecca, leaving him a widower with three sons. At this time the eldest son, Robert, served as a lieutenant in the U.S. Navy.

In 1945, after being discharged from the Army, he was introduced to a Texan named Conrad Hilton, who was



Colonel Henry Crown

trying to buy the Stevens Hotel in Chicago. Convinced that hotel space would be at a premium in the postwar boom, Colonel Crown suggested Hilton buy the Palmer House as well. Hilton suggested Colonel Crown meet his partners, who thought Hilton was the boldest man they had ever met.

Both hotels were bought by Hilton, with Colonel Crown joining Hilton in the acquisition of the Palmer House. That first venture began a lifelong friendship between the two men, as Colonel Crown joined Hilton in the development of Hilton Hotels.

By 1958, Material Service Corporation and its related coal and limestone companies were thriving, prosperous and cash-rich companies. Not wishing to be swallowed by an unsuitable larger corporation, Colonel Crown studied a number of merger possibilities carefully with his sons, Lester and Robert, and with his associates at Material Service. He chose the General Dynamics Corporation because he felt it had the potential to become one of the

major companies in the United States. After months of discussions, a successful merger of Material Service into General Dynamics was achieved.

But there were serious financial and operating problems in the corporation that management itself wasn't aware existed. Forced by these grave obstacles into a more dominant role, Colonel Crown successfully analyzed and resolved them. After he had returned the corporation to financial and operating stability, the Board installed a new management. A conflict arose between this management and Crown about the future course of the corporation.

In 1966, Colonel Crown was faced with a demand by the Board that he convert the preferred shares of stock he'd received in the merger into common stock. The alternative was to accept nearly \$125 million in cash for his shares and face a capital gains tax of almost 30 percent. After making a generous counterproposal to the Board, which it inexplicably chose not to divulge to General Dynamics' shareholders, Colonel Crown redeemed his shares. Soon afterwards, based on his family's conviction that if they didn't have a significant shareholder's interest in a company, they wouldn't remain active in its management, he and his family regretfully withdrew from General Dynamics and from managing Material Service, the company he and his brothers had founded almost half a century earlier.

But the destinies of Colonel Crown and General Dynamics were not to remain divided. As the value of General Dynamics stock declined, Colonel Crown began buying sizable blocks. Each time he bought a block of shares, he scrupulously notified General Dynamics management and the Board of Directors of his growing interest. By 1970, four years after he had first left the company, Crown had acquired a substantial interest in General Dynamics once more, a feat The New York Times praised as a remarkable achievement in the history of American business.

As a member of the reconstituted Board of Directors and Chairman of a revitalized Executive Committee, Colonel Crown led a move to bring in David S. Lewis as the new Chief Executive Officer, a man he felt could achieve the growth and profitability Colonel Crown had envisioned for the corporation. The two quiet but forceful men worked closely as friends and associates for the following 15 years.

From poor boy to wealthy man is not an uncommon story in America. What is unique about Henry Crown is that he accomplished this achievement with no arrogance or vanity, without losing that essence of character he revealed as a youth. Those who have known him as a friend and who have worked with him speak of his disarming charm, his wry sense of humor, his softness of voice, his unfailing courtesy. Yet, they speak as well of his remarkable memory and his business acumen that could focus and resolve problems that seemed perplexing to others. A banker said of him, "Those enterprises Henry Crown put together, belonged together."

Meyer Announces An Olympian Airlift With Cessna Citations

A "Citation Special Olympics Airlift," a plan to fly some 5,500 athletes and coaches in Cessna Citation business fanjets to the 1987 International Summer Special Olympics Games in South Bend, Ind., has been announced by Cessna Chairman Russell W. Meyer Jr.

Meyer announced plans for the massive airlift at the Collier Trophy Award Dinner in Washington, D.C., May 16th. His announcement was greeted by a standing ovation from the crowd of more than 800 aviation, government and military dignitaries.

Special Olympics, founded by Eunice Kennedy Shriver, who attended the Collier Trophy dinner, offers year-round sports training and competition to more than one million mentally retarded children and adults in every state in the U.S. and more than 60 nations.

The 7th International Summer Special Olympics Games, bringing together more than 5,000 athletes and 10,000 coaches and family members, will be held on the campuses of the University of Notre Dame and Saint Mary's College beginning July 30, 1987.

Meyer said the airlift will rival the Berlin Airlift in its scope.

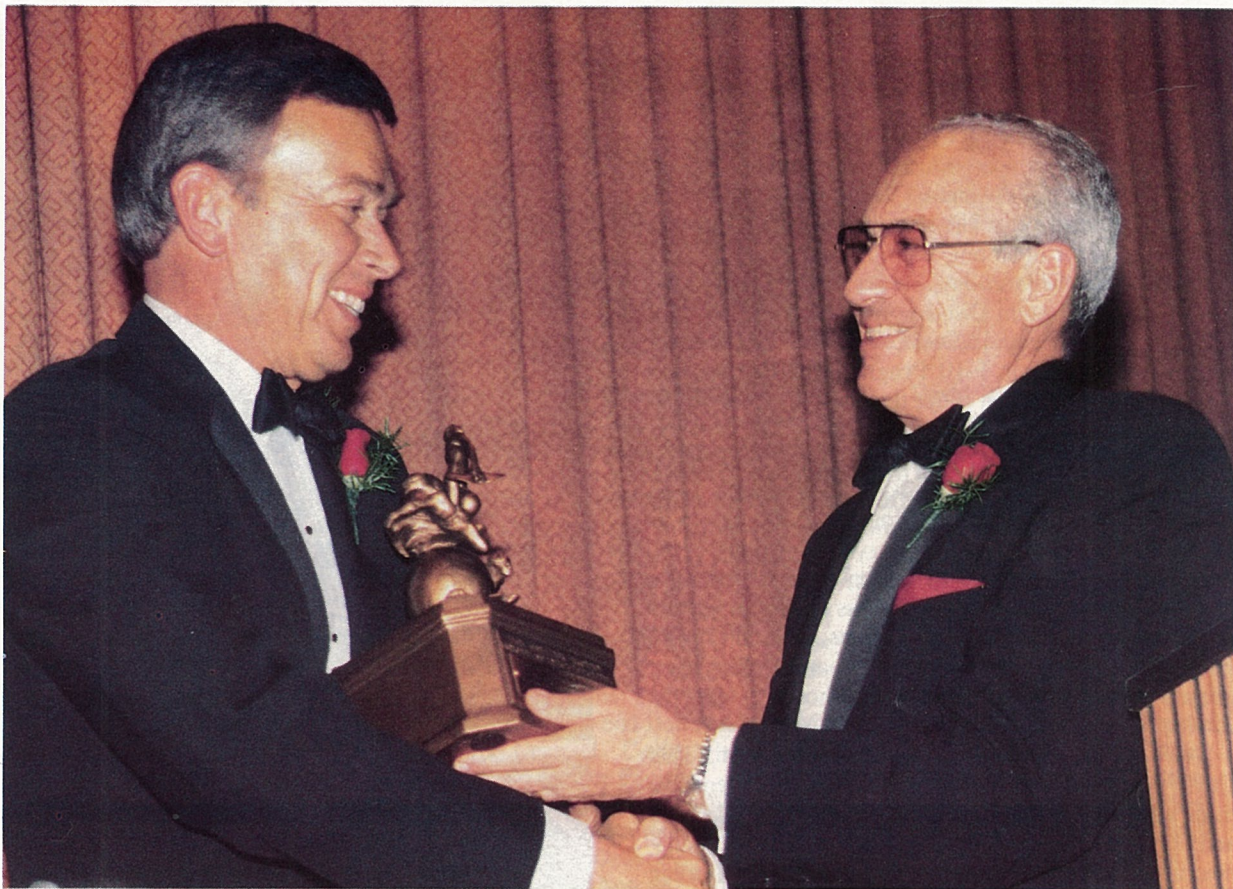
"It will certainly be more fun," he said. "And in terms of numbers, it will be no contest. At its peak, we're told the Berlin Airlift scheduled 120 flights per day. We're talking about five times that many flights to South Bend — a Citation landing about every 80 to 90 seconds for 14 to 15 consecutive hours!"

Federal Aviation Administrator Donald Engen has given Meyer his enthusiastic assurance that the FAA will extend its full cooperation in safely accommodating the airlift Citations in the traffic control system. John C. Schalliol, Airport Director in South Bend, also reported being solidly behind the project.

"The purpose of Cessna's offer," Meyer said, "is to show our support for the worldwide Special Olympics movement, to help reduce transportation costs to the Games and, most important, to help make this splendid event a totally enjoyable experience for all the athletes."

Meyer estimated that 500 to 600 Citations will be needed for the giant airlift. He said he had contacted many Citation owners before making the announcement and had received unanimous support from them.

(Continued on Page 7)



Cessna Chairman Russell W. Meyer Jr. Receives the Robert J. Collier Trophy for 1985 from Maj. Gen. Clifton F. von Kann

Cessna, Chairman Russell Meyer Honored As Recipients of Collier Trophy for 1985

More than 800 guests attended the 1986 Robert J. Collier Trophy award dinner May 16th in Washington, D.C., to honor Cessna Aircraft Company and its Chairman Russell W. Meyer Jr., as the recipients of aviation's most prestigious award.

Cessna and Meyer received the award for the safety record in 1985 of the worldwide fleet of almost 1,400 Cessna Citation business jet aircraft. For the second successive year, no passenger fatalities were recorded during nearly 750,000 flight hours by Citations operated in more than 40 countries.

The Robert J. Collier Trophy is presented annually by the National Aeronautic Association to an individual or company for "the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency or safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year."

In accepting the trophy from Maj. Gen. Clifton F. von Kann, President of NAA, Meyer said he did so "in behalf of the thousands of Cessna employees whose efforts and dedication over the years have resulted in our worldwide leadership in general aviation. In our opinion, they are the finest employees in the industry."

Cessna's Chairman also acknowledged the contributions of Citation owners, "because each Citation is operated in a highly professional manner. For achieving a perfect record that now extends all the way back to 1983, we salute all

Citation owners, the people who service the aircraft and, most important, the pilots who fly them."

The worldwide Citation fleet has flown 3.5 million hours since the first aircraft was delivered in 1972. Citations log more than 2,000 flying hours per day, or the equivalent of 33 trips around the world. A Citation fanjet takes off on a business flight every 44 seconds, every day of the year.

Meyer also introduced the team of 10 Cessna engineers who were responsible for designing, developing, flight-testing and certifying the original Citation, "an airplane that revolutionized the business jet industry and provided the foundation for our growing family of Citations. Without this team, we would not be here tonight to receive this award, and everyone at Cessna shares my gratitude."

Meyer, who is also a General Dynamics Executive Vice President and member of the Board of Directors, said it is appropriate that the 1985 Collier Trophy was awarded for a safety achievement, since safety in aviation and aerospace has never been a higher national priority. He reminded the gathering of aviation leaders that general aviation (all flying except airline and military) recorded its safest year in history in 1985, by a wide margin.

"That safety record was not achieved by good luck," Meyer said. "It was achieved because we have the best air traffic control system, because we are building better aircraft and equipment, providing more useful and neces-

(Continued on Page 7)



Last Ship Christened. Mrs. Alfred A. DiTullio, wife of a Quincy Shipbuilding employee, smashes a bottle of champagne against the bow of the *Sgt. William R. Button* and balloons fly skyward as she christens the ship at the Quincy shipyard. The ship was the last built by Quincy Shipbuilding, which closed the yard after the *Sgt. William R. Button* was delivered to the U.S. Navy's Military Sealift Command. (See related story on Page 4)

Lively Discussions, Probing Questions Mark Ethics Workshop By George Salamon

At 8 a.m. on May 29th, Flora Brewer, Administrator-Management Development at Fort Worth, asked 25 of the division's program officers what they expected to get out of the daylong Ethics Awareness Workshop.

"I'd like to discover a line on one side of which things are ethical, on the other not," said one attendee.

By 5 p.m. on the same day, Brewer, Jerry A. Sills, Fort Worth Ethics Program Director, and the workshop participants led by George L. Davis, Division Vice President and Program Director, F-111 Programs, had arrived at a very different conclusion about the goals of ethics awareness training.

"The workshop showed us that the line of the original question does not exist in most real situations," said Charla K. Wise, Manager F-16 Program, F-16C/D Blocks 25/30.

The eight hours that led the group from a quest for a clear-cut dividing line to an awareness of the complexity of most ethical situations in business were filled with spirited discussions, lively disagreements and probing questions about which values and rules should govern the conduct of business decisions.

"It was a valuable interchange, an open forum," said Davis, one of three workshop leaders who had attended a prior workshop led by Herbert F. Rogers, Vice President and Fort Worth General Manager. "We are into the fundamentals of business issues, into the blocking and tackling phase of a turnaround," Davis said.

Those basics were the subject of the day's first discussion, which revolved around the participants' interpretation of "Your Values . . . Our Values," the company's film about business ethics.

"There's nothing wrong with the definitions of ethics given by our employees in the movie," said one participant, "but applying them is what's tough."

"The definitions — honesty, integrity or doing the right thing — are O.K., but ethics is not a constant; it varies with what's acceptable in society," said another participant.

That key message of the film launched the Fort Worth group into a long and often heated discussion about the potential for conflict between what is a good business decision and what is an ethical one.

"In the current complexity of the business environment, are there so many pulls and tugs from rules, regulations and different constituencies that a manager's decision-making faculty can become frozen?" asked Brewer.

"O.K., decisions today will take longer because all of us are going to think about the ethical dimension of each decision, but they don't have to become frozen," was an answer from one of the group.

"People are asking more and more questions because they want to know what their responsibilities are down the line," was another reply.

"The critical issues we need to address, the reasons we are here today, have now surfaced," said Brewer, "so let's now look at the tools you'll need and the process you can develop to help you to make decisions."

The Fort Worth program officers then tackled the day's first case study. This case also demonstrated just how diverse opinions are, even in a group sharing similar professional backgrounds, in identifying and solving ethical problems.

Although the workshop members defended their interpretation of the case's significance and its proper resolution, all agreed that the failure to communicate about an ethical situation is the worst initial mistake an employee can make.

Brewer then led the group through the five-step process for analyzing and resolving ethics-related business decisions:

1. Recognize and face the dilemma.
2. Obtain all the facts.
3. List your options.
4. Test your options. Is each option: legal? right? beneficial?
5. Make a decision and act.

None of the five steps, as the group discussed their meaning and application, proved simple or always clear.

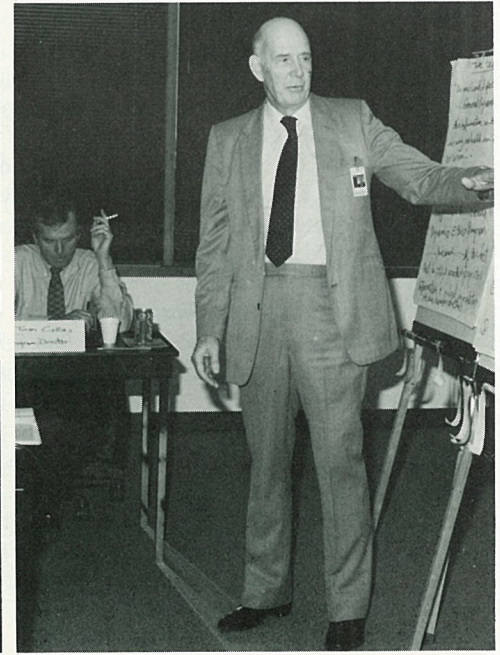
"Selling an item the government requested in a very low quantity was perfectly legal and right under the regulations, but in hindsight, it turned out not to have been beneficial," remarked one seminar member.

The workshop participants were then asked to apply the decision-making process while taking into account the changing complexities of the business environment.

The second case study of the day sparked a debate backed by the years of experience each participant brought to the conference room in Fort Worth.

"This is one difficult, sticky situation most of us have been in and will be in again," said one program officer. "There is just no complete answer on how to deal with the issue."

The "issue" touches on the appropriate handling of competitor data, a subject for which few explicit rules, but some very definite laws, exist.



Making Ethical Points. (Top left) Listening to Jerry A. Sills, Fort Worth's Ethics Program Director, as he addresses the May 29th workshop, are Flora Brewer, Administrator-Management Development, and George L. Davis, Division Vice President and Program Director-F-111 Programs; (top right) participating in the discussion of one of the workshop's working groups are, from left to right, Winton B. "Zim" Zimmerman, Program Director, F-16 Turkey; Harry T. Stucker, F-111 Deputy Program Director, and Charla K. Wise, Manager-F-16 Program, F-16C/D Blocks 25/30; (bottom left) discussing one of the cases presented in the workshop are, from left to right, Robert R. Wright, Manager of Special Projects; George C. Fowler, Director of F-111 Business Management, and Carol A. Rice, Engineering and Administrative Supervisor; (bottom right) presenting the dilemmas chosen by another working group is Forrest E. Armstrong, F-111 Deputy Program Director, as Thomas E. Collins, Program Director-F-16 OP CAP Upgrade, listens.

"We'd all like to have a clear policy, but we know how fluid each situation is," suggested one participant. "I suppose each case will require a dialogue or consultation and an individual answer."

With that lead-in, Brewer outlined just such a task for the five small group work sessions the workshop was then divided into. Each group was asked to make a list of ethical issues from their work situations, select one that best illustrates a representative dilemma and then apply the five-step decision-making process to the selected problem.

The cases described by the working groups created ethical dilemmas all 25 workshop members easily recognized. Each member brought to the interpretation and answer his or her own personal conviction and work experience. Few unanimous solutions were put forth as the seminar entered its concluding hour.

One group presented the rules for General Dynamics employees for a business conference meal on the site of a U.S. vendor or supplier.

"What is a reasonable equivalent abroad, especially if the foreign vendor does not have an in-plant cafeteria?" asked the presenter for the work group. "Do we turn down his hospitality? In the absence of explicit rules, what is legal, right and beneficial?"

Another group asked if the company is responsible for servicing a customer where no contractual coverage of that specific task exists:

"Shall we eat the cost as an unallowable one? That's legal but not beneficial to the company. Shall we request long-term coverage? Shall we do it at our risk in anticipation of long-term coverage? Shall we refuse to do it? That's not beneficial to our relationship with the customer. And we certainly aren't going to charge it to the contract — that is illegal." The list of options raised by this group drew answers for each option as varied as the program officers' encounters with similar situations. And yet a majority came to an agreement that a request for long-term coverage was the best decision.

"Even if it takes longer, and at first looks like a bad business decision, it's the appropriate decision," was the opinion most workshop participants supported.

At this point it was close to 5 p.m., yet the energy and spirit created by the detailed discussion of issues were not flagging. The workshop members were more eager than ever to come to terms with the specifics of situations that touched their common experience. And the intellectual challenge of solving cases had also taken hold.

When Brewer summarized the day's work, the participants agreed with her assessment that each one becomes a living example of the decision-making process, spreading the process to reach judgments up and down the line throughout the company.

After the workshop, they offered more individual versions of what the workshop, as a key element of the Ethics Program, meant to them.

"In the past, decisions were often made by precedent," said Davis. "Today we'll look at each one in light of the signal the company sent through this workshop — that the tools for looking at the ethics of each decision are important to the management of this company."

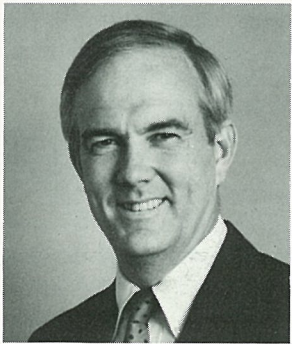
Philip L. Schwab, Program Manager-Air Defense F-16C, observed that the open debate in the workshops showed that "vice presidents and directors have the same problems as all the rest of us." That situation will spread the awareness of the company's stance and our sense of urgency in business ethics, he said.

To Winton B. "Zim" Zimmerman, Program Director-F-16 Turkey, asking so many questions in the workshop and in the workplace is a good sign that an understanding of the process for making ethical decisions is forming.

"If you can't stand the answer, don't ask the question" is an old saying that applies to our situation," he said. "But people are asking the questions, understanding dilemmas and going through the process. We are finding the ways to live with the company's guidelines. And we'll find the right answers where there aren't any."

Joseph T. Doyle Named Staff VP - Internal Audit At Company Headquarters

Joseph T. Doyle has been named Staff Vice President-Internal Audit at the Corporate Office. He will report directly to Standley H. Hoch, Executive Vice President-Finance.



Doyle, 38, had been Partner-in-Charge of the Pittsburgh office of Peat, Marwick, Mitchell & Co. since 1982. His 17 years with that certified public accounting firm also include positions as Audit Partner in the company's Philadelphia office, Audit Manager in New York and Audit Supervisor in Harrisburg, Pa.

Doyle is a Certified Public Accountant and 1969 graduate of the University of Scranton, with a Bachelor of Science degree in Accounting.

George W. Roos Appointed Convair's Vice President Of Human Resources

George W. Roos has been named Division Vice President-Human Resources at Convair. He began his career with General Dynamics in 1957 as a physicist at Electric Boat in Groton, Conn.



After a series of increasingly responsible positions, including several executive positions on the staff of the General Manager and as Director of Industrial Relations, he transferred to Fort Worth in 1977. He was named Director of Integrated Logistic Support at Convair in 1979.

A native of New York, Roos, 53, is a graduate of Iona College with a Bachelor of Science degree in Physics.

Savings and Stock Investment Values

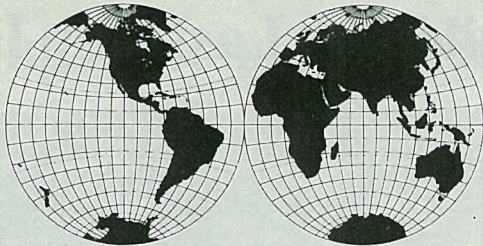
	Annual Rate of Return for the 12 Month Period Ending:		
	March 1984	March 1985	March 1986
Salaried			
Government Bonds	7.9%	10.1%	17.5%
Diversified Portfolio	0.0%	25.2%	44.3%
Fixed Income	12.1%	12.5%	12.2%
Hourly			
Government Bonds	8.0%	10.1%	16.9%
Diversified Portfolio	(0.2)%	24.8%	44.4%
Fixed Income*	N/A	N/A	12.3%
GD Stock Closing Price	\$45.62	\$73.00	\$85.00

* Fixed Income effective 6/30/85

Kerr Honored by S. Koreans

Dennis J. Kerr, a Land Systems employee at the Warren Logistics Center, was honored recently for his efforts as training coordinator/instructor for the XK1 Crew Training Program for South Korea.

Kerr, of Technical Training, received a plaque from H. M. Kang, Hyundai XK1 Program Manager and Senior Vice President, in ceremonies at the Warren Logistics Center. He also received a letter of commendation signed by Kang and I.S. Kim, Hyundai Director and ILS Program Manager.



Around the World

CHQ: Suzanne E. Christmann joined as Corporate Specialist Office Systems . . . David W. Roe as Auditor-in-Charge . . . Joseph J. Rogers as Auditor . . . Larry D. Stone as Subcontract Auditor . . . Richard A. Pope transferred from Land Systems and was promoted to Cost Systems Corporate Manager . . . Jeanine D. Smith transferred from DSD and was promoted to Information Systems Auditor . . . Gary W. White transferred from DSD and was promoted to Data Communications Corporate Manager . . . Janardhan S. Acharya transferred from Land Systems and was promoted to Production Engineering Corporate Director . . . Sharon A. Huffman was promoted to Corporate Office Supervisor-Transportation Services . . . Michael C. Lucero to Corporate Ethics Program Manager . . . T. C. Novaral to Internal Midwest Audit Manager . . . Thomas L. Schenks to Corporate Office Systems Manager . . . Patricia A. Moritz to Communications Assistant.

Fort Worth: Billy C. Peebles was appointed to Power & Control Systems Engineering Director . . . Harold R. Tomlinson to Engineering Administration Director . . . Albert J. Baskin III was promoted to Subcontract Management Coordinator . . . William R. Blackbird to Multinational Operations Chief . . . Joseph N. Carr to Manufacturing Control Chief . . . Robert E. Clark, Philip H. Harris Jr. and Dan Perkins to Material Planning Supervisor . . . Ray W. Colgin and Leslie McDarty to Foreman . . . Dennis L. Counts, Paul B. Holtz, Wade W. Lucas, Theodore Ovalle, Michael L. Ross and Andy M. Winger to Field Service Engineer . . . Robert S. Filarowicz and Ralph L. Kragle to Engineering Administrative Group Supervisor . . . Richard L. Hill and Kenneth L. Spracklen to Manufacturing Control General Supervisor . . . Steven L. Hoffman to Manufacturing Control Supervisor . . . Thomas M. Hull and Carter W. Meisenheimer to Inspection Supervisor . . . Jeffery A. Kincaid to Senior Planning Analyst . . . Shirley S. Koppel and John Q. Padgett to Field Engineer . . . Ann M. Leddy to Senior Field Engineer . . . A.C. Long to Manufacturing Support Equipment Supervisor . . . Tommy J. Lunday to Senior Contract Administrator . . . Charles W. McDonald and Keith J. Tupper to Principal Field Service Engineer . . . Bruce L. Tanner to Finance Chief . . . Herbert B. Winkler Jr. to Industrial Engineer . . . Michael D. Winters to Logistics Supervisor . . . Preston F. Wisely to Quality Assurance Chief.

Electric Boat: Edward Smuts was promoted to Purchasing Manager . . . Craig Coppage to Chief Nuclear Test Engineer . . . Thomas Hagist and Peter LaMay to Assistant Chief Nuclear Test Engineer . . . Robert Bull to Site Nuclear Ship Manager . . . Charles Gidney to Material Planning Chief . . . John Knowles to Reprographic Services Chief . . . Kevin Cassidy to Security Administration Chief . . . Richard Gudis to Administration Chief . . . Donna Simpson to Division Ombudsman . . . Harry Albino, Kevin Devine, Michael Kelly, Paul Laflamme, Shawn Lisee, Allen Smith and James Waite to General Foreman . . . Thomas Kelly to Ship Superintendent . . . Robert Rubel to Second Shift Operations Superintendent . . . John Foley, Albert Gauthier, Blair Hough and William Vanblarcom to Engineering Supervisor . . . John Crowley to Educational Services Supervisor . . . Roger Barber to Material Progressing and Control Supervisor . . . William Gerrish and Wilfred Rondeau to Industrial Services Supervisor . . . Graig Richardson to Logistics Supervisor . . . Joseph Harcut to Ship Design Coordinator . . . Richard Reall to Senior Program Coordinator . . . Carol Berge to EQIP Administrator . . . Gordon Greene to Engineer . . . Robert Navin and Palen Yorgensen to Assistant Superintendent . . . Edgar Babbit, John Houle, Debra Ihloff, Alan Kuhse, Gary Madore, John Morris, Joseph Natale, Nels Nelson, Kevin Reynolds and Bryan Way to Foreman . . . Thomas Stebbins to Technical Writer/Editor. At Quonset Point, John Stringer to Welding Engineering Manager . . . Joseph Gross to Trade Planning Supervisor . . . Richard Pierce to Production Services Supervisor . . . John Nozolino to Material Supervisor . . . Frank Brumfield to General Foreman . . . William Adams to Safety Administrator . . . Angus MacLeod to Foreman . . . Leo Maynard to Group Trade Planner. At Avenel, John Powers to Manufacturing Manager.

Convair: Louis R. Imbimbo Sr. was appointed to Aircraft Product Line Director . . . Thomas J. Buchanan and James A. DeShazo were promoted to Quality Assurance Program Manager . . . Jamie S. Crist to Motion Pictures and Television Photo Supervisor . . . Del R. Ciufi to Transportation Operations Supervisor . . . Rebecca L. Ramos to Manufacturing Engineering Operations Supervisor.

Electronics: Thelmon T. Copeland was appointed to Metal Fabrication Director . . . Percy L. Myers and Richard W. Ritz were promoted to Human Resources Manager . . . Thomas N. Groot to Senior Material Specialist . . . Beverly S. Williams to Project Administrator . . . Edward C. Brown to Senior Test Engineer.

Space Systems: Donald A. Nirschl was appointed to Test & Evaluation Engineering Director . . . Lawrence F. Wray to Systems Engineering Director . . . William E. Apfel, Gregory A. Danninger and Robert C. Risley were promoted to Program Manager . . . Robert C. Hinck and Robert L. Holcomb to Operations Product Manager.

Pomona: Michael L. Enfield was appointed to Navajo Facility Director . . . William E. Wulfert to Compliance Financial Systems Director . . . Donna C. Helm was promoted to Manufacturing Engineer . . . Ervin J. McConana, Lloyd R. Borowski, Donna M. Insulander and Agnes M. Rizo to Manufacturing Supervisor . . . Bob N. Stice to Engineering Administration Manager . . . James A. Wampler to Procurement Engineering Specialist . . . Anna L. Pearman and Marie L. Adams to Project Representative . . . Becky L. Hartkopf to Financial Management Systems Manager . . . Cathy L. McCain to Project Administrator . . . Barton T. Parker to Management Systems Specialist . . . Ronald D. Rheude to Estimating Manager . . . Scott E. Smith and Nancy E. Israel to Senior Management Systems Analyst . . . James R. Sogge to Section Head . . . David E. Williams to Senior Manufacturing Engineer . . . Ilsebill C. Wolfe to Systems Analyst . . . Ivan W. Allen II and Felix J. Serafin to Purchasing Agent . . . Andranek A. Astadurian to Human Resources Administrator . . . Faye E. Chapman to Buyer . . . Chris J. Coffield to Manufacturing Control Chief . . . David J. Hartstein to Senior Design Engineer . . . Vicki L. Heller to Systems Analyst . . . James G. McAlpin to Senior Human Resources Representative . . . John J. Sennikoff to Advanced Manufacturing Technology Manager . . . Clarence R. Walters to Material Control Supervisor . . . Kenneth C. Cundiff and Patrick J. Droll to Group Engineer . . . Barton K. Heiligers and Richard Stein to Production Support Chief . . . Edgar W. Jones to Senior Staff Engineer . . . Robert W. Kling to Manufacturing Control Coordinator . . . Gary L. Ownby to Procurement Chief . . . Donald R. Reeves to Project Coordinator . . . Raymond V. Sidrys to Manufacturing Development Specialist. At Camden, Dennis R. Dunn to Manufacturing Supervisor I . . . Michael G. Seibert to Project Coordinator . . . Felix L. Liveoak to Engineer Manager . . . Karen J. Wallace to Project Analyst . . . Donald N. Harris to Security/Safety/Medical Manager . . . Patricia A. Word to Facility Specialist . . . Margaret J. Matthews and Paul F. Wilson to Manufacturing Supervisor II . . . Gary V. Pehle to Senior Quality Engineer . . . Michael D. Curry and Aletha A. Hackett to Quality Engineer.

Valley Systems: Joe P. Harrison was appointed to RAM Systems Engineering & Field Operations Director . . . David P. Charest was promoted to Cost Control Specialist . . . Lana J. Hernandez and Lois J. Jordan to Manufacturing Supervisor . . . William C. Griffin to Senior Facilities Specialist . . . Angela M. Hacker to Quality Assurance Analyst . . . David P. Hartman to Senior Manufacturing Engineer . . . Gaynell Roderick to Senior Engineering Planner . . . Richard L. Rody to Engineering Staff Specialist . . . Timothy A. Adama to Section Head . . . James R. Jackson to Senior Electronics Engineer . . . Ralph C. Warman to Material Liaison Representative . . . Robert M. Cohen to Senior Project Engineer . . . David C. Mason and Robert A. Post to Production Support Chief . . . Albert P. Rodriguez to Quality Assurance Specialist . . . Francis E. Adams to Manufacturing Engineering Staff Specialist . . . Melvin A. Comried to Facilities Analyst.

Land Systems: Edward J. Evers was appointed to Product Software Program Director . . . Ronald G. Coleman was promoted to Quality Assurance Manager . . . Michael A. Puzzuoli to Quality Programs Manager . . . Thomas Bartkiewicz to Quality Assurance Engineering Specialist . . . Harold C. Trauger Jr. to Senior Quality Assurance Engineer . . . Amy M. Lodewyk to Contract Analyst . . . Frederick G. Bromm to Program Administrator . . . David J. Kasper to Product Engineering Specialist.

DatagraphiX: Gary W. Pack was promoted to Printer Products Program Manager . . . Paul R. Saunders to Marketing Support Services Manager . . . Dennis O'Toole to District Service Manager . . . Fred L. Lago to Material Control Supervisor . . . Gene F. Dove to Training Supervisor . . . Terry D. Hawes to Repair Supervisor.

GDSC: Jerry P. Gransden was promoted to Maintenance and Training Manager . . . John W. Brunengo to PMEL Branch Leader . . . Richard A. Kaiser to Facilities Maintenance Branch Leader . . . Leroy E. Halcomb to Project Coordinator . . . Jeanne M. Behr to Senior Estimating Specialist . . . Frederick B. Woodford to Senior Engineering Assistant . . . Michael B. Raymond to Field Engineer.

GENERAL DYNAMICS

World

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Quincy Shipbuilding's Last Ship Is Christened in a "Bittersweet" Ceremony

The fifth and final Maritime Prepositioning Ship was christened May 17th at Quincy Shipbuilding in a ceremony which Chairman Stanley C. Pace said "marks a bittersweet occasion for all of us."

The ship, *Sgt. William R. Button*, was the last vessel built at the 102-year-old shipyard, which has been closed and is scheduled to be sold.



Chairman Pace

The *Sgt. William R. Button* — as were the four Quincy-built MPS ships before her — was named for a U.S. Marine Corps hero who was awarded the Medal of Honor.

The ship was delivered to the U.S. Navy's Military Sealift Command on May 22nd, a week ahead of schedule.

At the christening, Pace said, "For more than a century, New England craftsmanship has been carried to sea on over 600 Quincy-built ships. The proud history of shipbuilding at Quincy reflects the exciting evolution of maritime technology in our country from the last days of sail to the age of nuclear-powered ships."

"From Midway to Normandy," Pace said, "Quincy-built ships like the *Lexington* and the *Nevada* earned their places on the U.S. Navy honor roll."

"Today, we conclude this tradition and its record of achievement with the christening of the *Sgt. William R. Button*," Pace said.

"We can all share in an accomplishment performed under very trying and depressed conditions in the industry," Pace said, adding that the ship "is a tribute to the skill and dedication of all those who built her, and to the families, friends and communities who gave their support and encouragement."

Pace spoke before a crowd of 2,500 persons, including hundreds of former Quincy Shipbuilding employees, who had gathered dockside under rainy skies.

As a tribute to the shipyard workers who built all the Quincy ships, the honor of christening the *Sgt. William R. Button* went to Mrs. Alfred A. DiTullio, wife of a Quincy shipyard employee.



Congressman Conte



General Kelley

Beginning with Mrs. DiTullio's father's 36 years of employment, 10 members of the DiTullio family have worked more than 232 years at the shipyard. Her husband had been a pipefitter for 35 years, and her son, Dennis, earned his college tuition while working at the shipyard.

"It is very fitting that Mrs. DiTullio represents all shipyard employees, their wives and families, whose spirit, skill and dedication she reflects so outstandingly," Pace said.

Mrs. DiTullio then smashed a bottle of champagne across the ship's bow, saying, "I christen this ship *Sgt. William R. Button*. May God bless her and all who sail in her."

At that point, hundreds of red, white and blue balloons were released and went skyward, and the Charlie Savage Band began playing "Anchors Aweigh."

The christening by Mrs. DiTullio broke a longstanding tradition in which a ship sponsor is usually a woman who is a close relative of the ship's namesake, the wife of a government official or a prominent woman. Since Sergeant Button has no surviving close woman relatives, the Quincy



Contest finalists. The wives of Quincy Shipbuilding employees who were finalists in the contest held to select the sponsor for the *Sgt. William R. Button* pose for a group picture. They are (left to right, front row) Mrs. David (Nancy) Greig, Mrs. Norman R. (Priscilla) Smith, Mrs. Leonard (Marguerite) Perrelli, Mrs. Alfred A. (Mary) DiTullio (the sponsor), Mrs. John (Josephine) DiTullio and Mrs. Filippo (Eda) Raia, and (left to right, back row) Mrs. Peter S. (Eileen) Butler, Mrs. Ronald (Leslie) Coutu, Mrs. Clifford (Dorothy) Emmett, Mrs. Gerald R. (Lucia) Doherty, Mrs. Arthur V. (Mary) Sherwood and Mrs. Eugene F. (Ethel) Haskell.

yard got Navy approval to select an employee's wife as the yard's last sponsor.

Mrs. DiTullio was one of 12 finalists in a contest conducted by the division in which employees were asked to write a nominating letter telling why their wives should be chosen as the ship's sponsor. Mrs. DiTullio was picked at a drawing limited to the wives mentioned in the best letters.

Congressman Silvio O. Conte of Massachusetts, the featured speaker, noted that there are only a few shipyards "that can do the kind of work which supports our maritime strategy."

He said that he felt concerned "about the status of this shipyard and its effects on national security capabilities for the future."

"A maritime nation must have strong, capable and viable shipyards," he said.

"The United States is faced with the greatest maritime responsibility of all time," Congressman Conte said, "We are calling on the Marines to go in first, and I think that we realize that going first requires better tanks, artillery, aircraft and logistics support equipment such as this ship behind me."

The five Quincy-built supply ships and eight others being converted by other shipyards are designed to assist landings by U.S. Marines anywhere in the world.

The 671-foot-long, 22,700-ton ships will provide support for the U.S. Rapid Deployment Force and will be stationed, fully loaded, at forward bases in regions of potential crisis. They are capable of carrying ammunition, fuel, supplies and equipment needed by one-fourth of a Marine Amphibious Brigade, or about 3,000 Marines.

General Paul X. Kelley, Commandant of the U.S. Marine Corps, called the Quincy yard "a national treasure."

Alluding to the rain that began as the ceremony commenced, General Kelley said that perhaps God and all the shipyard workers "are up there weeping, shedding a bit of

a tear and hoping there may yet be a miracle (to keep the yard open)."

Gary S. Grimes, Vice President and Quincy General Manager, said, "None of the experts believed at the time of the shipyard closing announcement that our last three ships would be delivered within budget and on schedule. Against overwhelming odds, in the marine tradition and because of the character of Quincy shipbuilders, we have been able to overcome those feelings of frustration and personal uncertainty and once again prove the experts wrong."

The 182-acre shipyard on the Fore River, which was bought by General Dynamics 21 years ago from Bethlehem Steel, officially closed on June 1st. About 100 employees remain at the yard, pending its disposition. In 1943, during wartime shipbuilding, the yard had a peak employment of more than 32,000 workers building a variety of ships.

Quincy's last ship was named for Sgt. William R. Button, who received the Medal of Honor for outstanding heroism and conspicuous gallantry during a battle near Grande Riviere, Haiti, in 1919.

Sergeant Button's bravery resulted in the death of Charlemagne Peralte, the supreme bandit chief in the Republic of Haiti, and the killing, capture and dispersal of about 1,200 of his outlawed followers.

After a furlough in his native St. Louis, Mo., Sergeant Button returned to duty in Haiti and died of malaria at the age of 25 about a year after the battle.

Sergeant Button's only surviving relative, Ralph M. Francis of Wichita, Kan., a grandnephew, and his wife, Kristi, attended the christening.

The ship named in Sergeant Button's honor has joined her four Quincy-built sister ships, *2nd Lt. John P. Bobo*, *Pfc. Dwayne T. Williams*, *1st Lt. Baldomero Lopez* and *1st Lt. Jack Lummus*, already in service.

A General Dynamics subsidiary, American Overseas Marine Corporation, will operate the ships under a long-term charter to the Military Sealift Command.

Land Systems and FMC Defense Systems Join in Armored Vehicles Study

Land Systems Division and the FMC Defense Systems' Ordnance Division have formed a joint venture study team to develop system concepts for a new family of armored vehicles.

Concepts for 28 vehicle missions will be analyzed to develop a family of vehicles that will be less costly and more effective than today's fleet. The Army's Tank-Automotive Command expects to award 15-month study contracts in early summer.

"The goal of this joint venture is to utilize the full resources of both companies to study the feasibility of a vehicle family that shares maximum commonality while

significantly reducing costs," said Robert W. Truxell, Vice President and Land Systems General Manager.

Adolph M. Quilici, Vice President and General Manager of FMC Defense Systems' Ordnance Division, added: "This joint effort will enable us to combine the unique vehicle experience of FMC and General Dynamics to recommend to the government concepts for a viable, affordable armored fleet for the 1990s and beyond."

The joint venture melds FMC's light armor, front-drive expertise on the Bradley Fighting Vehicle with General Dynamics' heavy armor, rear-drive experience on the Abrams main battle tank.

Michael D. Bolon of Land Systems' Research and Engineering has been selected to head the Joint Venture Study Team. Land Systems and FMC will staff key positions of the team, which will be headquartered in Troy, Mich.

General Dynamics Land Systems Division is located in Warren, Mich. FMC Defense Systems' Ordnance Division operations are in San Jose, Calif.

"This new tracked-vehicle team is the strongest in the industry and will provide the Army with an excellent study as a foundation for its family of armored vehicles program," Bolon said.

Texas Air Guard Gets F-16s; First Fighting Falcons Based in Home State

The Texas Air National Guard's 149th Tactical Fighter Group officially accepted its first F-16 in a recent ceremony at Kelly AFB, San Antonio. The unit is the first to fly the Fighting Falcon in the state where it is manufactured.

The aircraft was taxied to the ceremony area by Col. Clifton Clark, Commander of the 50th Tactical Fighter Wing at Hahn Air Base, West Germany. The F-16s assigned to the Texas ANG were based at Hahn before the 50th TFW began its conversion to F-16C/D models.

According to USAF tradition, Col. Gary R. Walston, Commander of the 149th TFG, accepted the aircraft's transfer papers from Colonel Clark.

"The receipt of this high-technology, high-performance, front-line fighter is a clear demonstration of the broad support we receive from the Air Force and the heavy reliance our country places on the Air National Guard," Colonel Walston said. "The acceptance of the Fighting Falcon marks a most significant event in the 149th unit's 40-year history."

Maj. Gen. Robert W. McDonald, Commander of the Texas Air National Guard, and Maj. Gen. Oly Logan, the USAF Tactical Air Command's Air National Guard advisor, also participated in the ceremony.

An F-16 air show, flown by Maj. Ron Oholendt, of the 311th Tactical Fighter Training Squadron at Luke AFB, Ariz., was one of the highlights of the event. An F-4 flyby, to commemorate the previous aircraft of the 149th TFG, was also performed.

Herbert F. Rogers, Vice President and Fort Worth General Manager; David J. Wheaton, Fort Worth Vice President-Marketing, and Rolf Krueger, Fort Worth Vice President-Logistics and Support, represented General Dynamics.



Texas Air National Guard F-16 Flies Near the Tower of the Americas in San Antonio

Cessna Develops Program to Encourage Instrument Flight Training

Cessna Aircraft Company has streamlined its professional pilot training course to make it even easier for pilots to earn their instrument flight ratings.

Called "Cleared Direct," the training program was developed recently when the Federal Aviation Administration lowered the number of flight hours required for an instrument rating from 200 hours to 125.

Using the new Cessna program, pilots can now move directly into an instrument training program after receiving their private pilot's license, instead of first trying to build additional flight time, including the required 50 hours of

cross-country flight as pilot in command.

Cessna's Cleared Direct program provides a recently licensed private pilot with instruction in precision attitude instrument flying and advanced instrument navigation.

"Using this program," said Russ Watson, Manager of Cessna Pilot Center Sales, "the pilot can use and practice these skills during the pilot-in-command, cross-country segment which is built into the curriculum."

"Students no longer have to fly cross-country during a period of inexperience between receiving their private license and beginning their instrument instruction," Wat-

son added. "Cleared Direct will take students from wherever they are in their flight experience to their instrument ratings in as little time as possible."

Watson said Cessna Pilot Center instructors will carefully analyze each student's flight experience and individually tailor the Cleared Direct program to each pilot.

"In many cases," Watson said, "the business or personal trips students regularly fly will qualify as credit toward their instrument ratings. The skills they learn help to make their cross-country flying safer, even before they receive their instrument ratings."

Veteran Pilot Neil Anderson Has Flown 200 Different Types of Aircraft

Fort Worth's Neil R. Anderson reached a new milestone in his career as a test pilot recently by flying his 200th type of aircraft, a Draken J35, of the Royal Danish Air Force.

Anderson said he was pleased to get the opportunity to fly the Mach 2 fighter, built by Saab in Sweden, during a visit to Karup Air Base in Denmark. "I'd been anticipating the 200th for a long time and wondering what kind of machine it would be," he said.

Anderson has been an F-16 test pilot for 12 years and is currently Director, International Marketing, at Fort

Worth. He flew first flights in the F-16A and F-16B in addition to dozens of other "firsts" on the F-16 and F-111 programs over the past 18 years. Besides experimental, development and production testing, he has been active in flight demonstrations for foreign pilots and international airshows.

Among the aircraft types he has flown, Anderson lists 28 other fighters in the Mach 2 class, multiengine bombers, commercial airliners, business airplanes, sailplanes, helicopters, blimps and a hot air balloon.

Aircraft types are differentiated from models. For example, he has flown eight models but two types of F-111 aircraft.

In describing the Draken, Anderson said the aircraft "is unique in that it's a high performance airplane developed by a neutral nation. As a result, it incorporates features borrowed from other nations' airplanes, as well as some developed by Sweden."

Anderson put the aircraft through high performance climbs, aerobatics, low altitude handling, low speed flight and tactical maneuvers during a one-hour flight. As a test pilot, he has taken an evaluation approach to nearly all the aircraft he has flown. His primary interests are handling qualities, capabilities and limitations, performance and overall utility, he said.

Anderson has flown dozens of foreign aircraft, including some manufactured in the Soviet Union. In addition to learning about the various airplanes, he has become knowledgeable about foreign flight gear, such as restraint and escape systems. "The U.S. and Britain make the best gear in the world, and the Soviets make the worst," he said.

Besides the F-16, Anderson said his favorites among aircraft he has flown are the FJ Fury series, Hawker Sea Fury, MiG-21 and F-8 Crusader.

Anderson won the Unlimited Class in the National Championship Air Races in Reno, Nev., in 1983 flying a modified Sea Fury. It was his first national air race.

His experience flying the F-16 has included more than 400 flight demonstration routines in 13 countries, including several appearances at the Paris and Farnborough air shows. In addition, he piloted several dozen production F-16s on their first flights while assigned to Flight Test at Fort Worth.

He spent seven years as an F-111 experimental test pilot, was formerly a U.S. Marine Corps aviator and has logged more than 9,200 hours of total flight time, mostly in fighters. He has been honored as a Fellow of the Society of Experimental Test Pilots, is a member of the Fort Worth Aviation Advisory Board and was named Pilot of the Year by the St. Louis University Alumnus Association.



Neil R. Anderson and a Fighting Falcon on the Flight Line at Fort Worth

D. R. Patterson Family Is Featured in United Way Promotional Film

The family of Fort Worth employee D.R. "Pat" Patterson is featured in a promotional film that will be shown by the United Way of Metropolitan Tarrant County, Texas, as part of its 1986 fund drive.

The film tells the story of Patterson's learning-disabled daughters, Margaret, 24, and Mary, 21, and the job training and rehabilitative therapy they have received through United Way agencies. It shows Mary at her job at a local restaurant and explains how the two women have become almost self-sufficient with United Way's help and are now living on their own.

This is the first film Patterson has appeared in, but it is not the first time he has spoken up for United Way agencies and the many volunteers who staff them. As a member of the United Way Speakers' Bureau, he has given testimonial talks about the organization at many area companies and civic meetings.

"If it weren't for the agencies and volunteers, there would be no place for many people like my daughters to get the help they need," he explained. "Helping to promote United Way's cause is a way for me to pay something back."

Patterson received assistance earlier in his life from a United Way predecessor organization, the Community Chest. He was partially paralyzed by polio in his childhood, but he recovered almost totally as a result of therapy the organization made available.

Patterson has served on the Priorities Committee of the area United Way, which matches potential programs with community needs and recommends funding levels to the organization's Allocations Committee.

He has been employed at Fort Worth for seven years and is a senior quality assurance engineer in Quality Assurance Administration.

He and his wife, Marti, also have a son, Danny, and another daughter, Toni.

One of the major benefits of United Way programs, like

the job training his daughters received, is that they allow individuals to develop and retain their dignity, Patterson said. "It's just like receiving help from a neighbor or a good friend."



Movie Production. United Way camera crew films a Patterson family picnic near downtown Fort Worth for a scene in the organization's 1986 campaign film. Sitting on quilt (left to right) are Marti, Pat, Margaret and Mary Patterson. A film crew member displays the scene clapper stick upside down during an exposure check so that the photographer will concentrate on the white space instead of the letters.

Two Top Fort Worth Cameramen Did Filming for the Movie "Top Gun"

Fort Worth employees Gary Tolbert and Nick Alvarado do not claim to be movie critics, but they know they like two things in particular about Paramount Pictures' current release, "Top Gun": its aerial scenes and their names in the credits.

The Multimedia Department photographers used vacation time to work on the movie last August as camera operators assisting Hollywood film crews. Dick Stevens, the aerial coordinator for "Top Gun," sought out the two because he was familiar with the excellent work they have done on such Fort Worth productions as "The Thunderbirds."

Tolbert spent nine days with the crew and filmed air combat scenes from the rear cockpit of an F-14 chase airplane during flights from Miramar NAS, Calif., and a Navy range at Fallon, Nev. Alvarado worked at Fallon for 10 days, shooting ground-to-air footage of aircraft from a mountain perch.

U.S. Navy pilots and aircraft did the flying in all of the movie's air combat sequences.

In preparation for filming aerial scenes over the Pacific, Tolbert attended a two-day Water Survival School at Miramar with "Top Gun" star Tom Cruise and others.

Following classroom instruction in Navy survival techniques and equipment, the students were tested in dunking machine "crashes" in which they were required to release themselves from aircraft restraints under water.

"At first, the Hollywood people were apprehensive about the training and fighter airplanes in general," said Tolbert, who has extensive experience in air-to-air photography as a passenger in the F-16 and other types of aircraft. "What we learned in the safety school reassured them."

Alvarado estimated that he shot a large percentage of the ground-to-air footage used in the film. "It was very interesting to work with people on the crew, who had all been involved in making a number of well-known movies," he said. His experience in aerial photography allowed him to make major contributions, such as teaching the other photographers a method for quickly locating aircraft in a wide expanse of sky with a narrow lens view.

"I showed them how to improvise a camera sight by using loops of wire attached to the lens barrel with tape. They'd never seen anything like it, but found that it is very effective," he said.

The crew was taken to the mountain each day by helicopter. Alvarado said there were a few exciting moments on the set, such as when an F-14 swooped so low that the jet blast knocked down the assistant director and blew the crew's chairs off the mountain.

In the cockpit, Tolbert used a hand-held 35mm camera which supplemented aircraft-mounted cameras controlled by the pilot. The camera was larger than the ones he normally uses when flying in the F-16. "Like any heavy camera, it was fairly hard to hold during maneuvers," he said. "The challenge is not so much to hold on as it is to get usable footage, with all the shaking and bouncing."

He said there is a marked difference between the cockpits of the F-14 and the F-16, due to the Fighting Falcon's reclined seat and other features. "Pulling 7g's in the F-14 seemed a lot more violent than 9g's in the F-16."

Tolbert has worked at Fort Worth for eight years, was a television news photographer for five years and served four years as a photographer in the U.S. Air Force. Alvarado has been at Fort Worth for five years and was an Air Force photographer for 10. He, too, has done considerable air-to-air work in the F-16 and other fighters.

Both said it was quite a thrill to see their names in the movie's credits. They feel the aerial action in the film, overall, is among the best seen on screen.

"The hardest part was keeping quiet all those months about what happens in the movie since we saw the script last summer," Alvarado noted.

Tolbert said he hopes to film at Miramar again, in his regular job, after the Navy's F-16N Adversary fighters begin arriving there in 1987. The F-16N will be used in air combat training like that depicted in "Top Gun," which borrowed its title from the nickname for the Navy Fighter Weapons School.



Fort Worth Cameramen Nick Alvarado and Gary Tolbert with "Top Gun" Poster

Racing Car Driver Al Unser Sr. Travels 700 mph, But He Does It in an F-16

Race car driver Al Unser Sr. said he had the ride of his life recently when he flew in the rear seat of an Air Force Reserve F-16B at Hill AFB, Utah, during filming of a public service announcement for television.

The three-time Indianapolis 500 winner said he has driven automobiles at speeds of up to 250 mph, but he exceeded Mach 1, more than 700 mph, in the Fighting Falcon. "I don't think you realize when you get off the ground just how fast you're going," he said. "In a car you get the sensation of speed a lot more. Once I got up in the air and adjusted to the feel, the pilot had to keep telling me how fast I was going."

Col. Bane Lyle, Deputy Commander for Operations of the Air Force Reserve's 419th Tactical Fighter Wing, was front-cockpit pilot on the orientation flight. After takeoff, Colonel Lyle put the aircraft through a 6g, maximum-power vertical climb to 16,000 feet. Later, he made a Mach 1.2 run at 300 feet and a 9g turn.

"I've pulled g-loads before, but nothing that great," Unser said. "G-loads you can feel are really an experience. I couldn't even hold my head up."

Unser said he at first felt "very nervous" when Colonel Lyle let him take control of the aircraft for a while. "I grabbed the handle like I would kill it," he joked.

The veteran of hundreds of car races said he quickly calmed once he got the feel of the airplane and wanted to continue flying when Colonel Lyle ended the 45-minute mission with a simulated flame-out landing.

The F-16 could be described as an auto racer's dream, with its high speed and unsurpassed maneuverability, Unser said.

In the Air Force Reserve announcement, Unser said of the F-16: "If I had this engine in my car, Al Jr. (also an auto racer) would never beat me to the checkered flag."



Preflight Briefing. Three-time Indianapolis 500 champion Al Unser Sr., at left, listens intently to the safety instructions of Col. Bane Lyle before Unser's orientation flight in an F-16B Fighting Falcon at Hill AFB, Utah. Colonel Lyle, 419th Tactical Fighter Wing Deputy Commander for Operations, flew Unser in the fighter as part of a series of public service announcements Unser filmed for the Air Force Reserve at Hill. (USAF photo by Capt. Tony Epifano)

Cessna Suspends Production of Single, Multiengine Piston Aircraft

Cessna Aircraft Company announced May 28th that it has suspended all single and multiengine piston aircraft production through model year 1987. The move will not affect Cessna's Citation business fanjet line or the Caravan and Conquest propjet models.

Aircraft affected by the suspension include the 1986 Skyhawk, Skylane, Stationair 6, Centurion and Businessliner (Models 172, 182, 206, 210 and 402) currently being produced at Cessna's Aircraft Division.

Citing continuing slow sales, Cessna Chairman Russell W. Meyer Jr. said the action was taken to help improve the company's current operating performance while market demand for these products remains at historically low levels.

"This is the sixth consecutive year of severely depressed piston sales," Meyer said, "and we cannot continue to sustain the financial losses which result from such low production rates."

"With increased flight activity, substantially fewer aircraft in inventory, lower interest rates and decreasing fuel

costs," Meyer said, "we had expected the market to begin to recover this year. However, that recovery has not materialized."

Meyer said that approximately 900 employees in salaried and nonsalaried positions will be affected by the suspension between now and the end of July. "We intend to explore every means to identify other job opportunities for those impacted by this action," he said, "including a job placement office and an attempt to match each individual's job skills with existing position requirements at the other 15 divisions of General Dynamics."

Meyer said the decision to suspend production does not change Cessna's commitment to a full line of general aviation aircraft. "Cessna has achieved its worldwide leadership over the years by producing a complete line of aircraft from two-place trainers to business jets," Meyer said, "and we intend to remain in the piston business as long as it is economically feasible."

Meyer indicated that a major factor in the decision was the enormous increase in the cost of product liability in-

surance.

"Like many industries in this country, general aviation has been devastated by the cost of insurance, most of which is related to insuring aircraft that were manufactured many years ago," he noted. "As a result, the cost of product liability insurance today is the largest single component by far in the cost of a piston aircraft."

Senior Vice President of Marketing Brian Barents emphasized that Cessna will continue to support fully the piston aircraft fleet and its existing distribution organization.

"Our dealers and customers are extremely important to us and their loyalty will be vital to our future success," he said. "Cessna will continue to provide parts, technical information and service support for our dealers and customers worldwide."

Cessna is the world's largest manufacturer of general aviation aircraft. The company has built more than 176,000 airplanes, including almost 1,400 Citation business jets and 2,000 military jet aircraft.

Meyer Announces An Olympian Airlift

(Continued from Page 1)

The Citations will also return to South Bend nine days later to fly the Special Olympians home.

In accepting Cessna's offer, Mrs. Shriver thanked Meyer on behalf of the athletes, parents and volunteers of Special Olympics.

"The airlift will save our community programs close to \$2 million in transportation costs," Mrs. Shriver said. "This will lift a tremendous burden from the shoulders of our volunteers now trying to raise the money to participate in the Games."

"We are most grateful to Cessna for their tremendous leadership, skills, time and imagination in making possible the creation and financing of this unprecedented airlift," Mrs. Shriver said. "This exemplifies their commitment to Special Olympics and its millions of athletes, families, volunteers and friends."

Moreno Elected

Jaime Moreno, Manager of Technical Marketing at Material Service Corporation, has been elected to the American Concrete Institute's Board of Directors. He is a cofounder and a past president of the ACI-Chicago chapter.

Cessna and Chairman Russell Meyer Honored

(Continued from Page 1)

sary information to our operators through standardized manuals and handbooks and because we have developed much more effective training programs and simulators for both new students and professional pilots."

Meyer told his audience, which included top government and congressional leaders, that "we have a golden opportunity to make the aviation safety record substantially better in the future."

"With careful planning between the Department of Transportation, the Federal Aviation Administration and all members of the system," he said, "we can draft and implement much more effective and meaningful regulations which balance the interests of everyone. It will require a conscientious effort by both government and industry: a willingness by everyone to work together, a renewed sense of urgency, the courage to act and a clear recognition that the highest priority in aviation has remained constant since man's very first flight. That priority is aviation safety."

Other speakers were Elizabeth H. Dole, Secretary of Transportation, who read a congratulatory letter sent to Meyer by President Ronald Reagan, and golfer Arnold Palmer, a longtime Citation owner and pilot who reminisced about his association with Russ Meyer which dates back to the early days of Palmer's golfing career.

Palmer quipped that Meyer was, in fact, the ghost writer of a series of articles on golfing tips that Palmer published in the early 1960s. "He was, and still is, a fine golfer," Palmer said.

Palmer's business activity and tournament play keep him on the move, usually at the controls of his Citation III fanjet. He learned to fly almost 30 years ago and has operated four Citations since 1975. He has 9,000 hours of flight time, 7,000 of those in jet aircraft, and has frequently been an ardent spokesman for general aviation safety programs.

In addition to his golf course design and consulting work, he owns Arnold Palmer Aviation in Latrobe, Pa., operating six Citations for other companies in five states.

In his closing, Meyer said that "thanks to the vision, efforts and courage of so many pioneers, America has been the world leader in aviation for more than 80 years."

"We believe very deeply that worldwide leadership in aviation and space remains an extremely high priority for this country — perhaps higher now than ever before," he said.

"There are still some fantastic opportunities for advances in technology, but we must always remember, in the spirit of Robert J. Collier, that safety is the number one priority," Meyer said.

The original Robert J. Collier Trophy is on permanent display in the National Air and Space Museum in Washington. It was first awarded in 1911 to Glenn H. Curtiss for development of the hydro-aeroplane and was presented to Orville Wright in 1913. In 1976, General Dynamics Chairman David S. Lewis and the USAF/aerospace industry team which produced the F-16 were awarded the Collier Trophy "for the greatest achievement in aeronautics or astronautics in America" in 1975.

Consolidated-Built PBY Flying Boat Reenacts First Trans-Atlantic Flight



Successful Trans-Atlantic Flight. A World War II PBY-6 amphibian built by Consolidated relived history last month. The Catalina successfully retraced the route of the U.S. Navy's NC-4 flying boat when it made the first trans-Atlantic flight in 1919. The NC-4's historic flight was made from Newfoundland to Lisbon, Portugal, with a stop at the Azores. The PBY is shown (upper left) with an F-16 escort as it prepared to leave its home base at Big Spring, Texas. It then flew to Pensacola, Fla. (upper right), Washington, D.C., (middle left) and New York (middle right) for civic and Navy celebrations there. The PBY picked up a World War II vintage P-51 fighter from Chatham, Mass., as an escort on its way to Newfoundland (middle right). It also is shown splashing down in the harbor at Horta in the Azores (lower left) and taking off from the Horta harbor (lower right). The PBY reenactment flight, supported financially by General Dynamics, was made to commemorate the 75th anniversary of U.S. Naval Aviation.

General Dynamics, Boeing and Lockheed Form ATF Team

General Dynamics, The Boeing Company and Lockheed Corporation announced a teaming agreement for development of the Advanced Tactical Fighter (ATF) for the U.S. Air Force. The agreement includes design, manufacture, test and support of the ATF.

In a joint statement by Chief Executive Officers Stanley C. Pace of General Dynamics, Frank Shrontz of Boeing and Lawrence O. Kitchen of Lockheed, the companies said, "This agreement allows us to consolidate our respective technical, management and human resource strengths to provide the best possible weapon system for the Air Force. We are committed to working vigorously together to meet all program objectives."

The companies said that the agreement is in response to the Air Force's "clear and strong encouragement" for teaming on this and subsequent phases of the ATF program. It is also intended to provide the strong competition desired by the Air Force for the ATF Full Scale Development program scheduled to begin in 1990.

The Air Force plans to award two contracts this October for the Demonstration/Validation phase. Each of the three companies in the teaming agreement will submit independent competitive proposals late this month along with the four other competitors. If one of the team is selected as a winner by the Air Force, it will become prime contractor and the other two companies will be subcontractors. To the greatest extent practicable, the three companies will share equally in the program.

Pace, Shrontz and Kitchen said that the team "views the Advanced Tactical Fighter as a national defense program of the highest priority and one which should be forcefully pursued if the U.S. Air Force is to meet the increasingly strong threats of the '90s and early 21st century."

Employees Interviewed As Consultants Shape Survey Questionnaire

More than 90 "focus group" interview sessions with employees at all divisions have been conducted to date by the consulting firm of Sirota and Alper Associates, Inc., in preparation for the companywide employee survey to be conducted this fall.

The interview sessions, which involved more than 1,400 employees from different functions and varying salaried and hourly levels, will play a key part in the development phase of the survey and were intended to identify issues uppermost on the minds of employees.

David Sirota, who together with S. William Alper heads the New York City-based management consulting firm, said that results of these initial interviews will be used as a base of information from which the questionnaire will be constructed.

"This input is vital to our creating and tailoring questions which will allow employees from coast to coast to view their opinions on what they consider topics of primary concern," Sirota said. "The interest in this project across the board has been extraordinary. It's most unusual to find such consistent enthusiasm in a company as large as General Dynamics."

Sirota emphasized that the questionnaire will be designed to ensure anonymity and that none of the information received will be used to audit individual employee performance in any way.

Mary F. Cook, Corporate Manager-Human Factors, is Survey Program Director, and coordinators have been appointed at each division to assist with the survey at the local level. They should be contacted by employees who have questions about the survey.

Results of the survey will be made known to all employees.



The Fast-Attack Submarine *Helena* Slides into the Thames River at the Electric Boat Shipyard

Fast-Attack Submarine Helena Is Christened In an Impressive Ceremony at Electric Boat

Sporting a splash of champagne and drenched in cheers, blaring brass and late afternoon sunshine, the submarine *Helena* made her waterborne debut on June 28th.

She is the 22nd in a line of sophisticated SSN 688-class fast-attack submarines built by Electric Boat at Groton, Conn.

While more than 7,000 employees, their families and visiting dignitaries applauded, Mrs. Jean Cole Busey smashed a bottle of champagne across *Helena's* bow-plate, sending the 360-foot ship plunging down the launch ways and into Connecticut's Thames River.

Adm. James B. Busey, Vice Chief of Naval Operations



Admiral Busey



Congressman Gejdenson

and husband of the ship's sponsor, called *Helena* "yet another significant achievement for Electric Boat Division, . . . an impressive product of the shipbuilder's art and a tribute to the . . . craftsmen who have built her."

Admiral Busey, principal speaker at the shipyard's first christening ceremony this year, said that U.S. submarines "are at a higher state of readiness today than ever before . . . and provide a powerful deterrent to Soviet adventurism."

"We can all take justifiable pride in this ship," he said.

Stanley C. Pace, General Dynamics Chairman and Chief Executive Officer, said that "the people who built this ship, once again, have done an absolutely outstanding job. The men and women at Electric Boat, together with the rest of the more than 100,000 employees of General Dynamics . . . constitute in my mind what is literally a national resource."

Following his remarks, Pace introduced Connecticut's 2nd District Representative Samuel Gejdenson and Senator Christopher J. Dodd.

Congressman Gejdenson cited "the quality of the product" built by Electric Boat employees, calling them "a workforce second to none."

Senator Dodd said that "no yard in the world turns out

(Continued on Page 2)

Ribbon-Cutting Ceremony Officially Opens New Data Systems Building in Norwich, Conn.

While banks of sophisticated high-speed mainframe computers and teleprocessors hummed quietly nearby in their new air-conditioned quarters, a traditional ceremony marked the official opening of Data Systems' new Eastern Center addition in Norwich, Conn., on June 28th.

The traditional ribbon cutting was enacted by General Dynamics Chairman Stanley C. Pace and U.S. Senator Christopher J. Dodd of Connecticut, each wielding a pair of 10-inch inlaid steel shears against a blue and gold ceremonial ribbon.

The ceremony and the open house which followed were attended by many of the Center's 400 employees, their families and a number of dignitaries. These included Connecticut 2nd District Representative Samuel Gejdenson; the Most Rev. Daniel P. Reilly, Bishop of Norwich; Oliver C. Boileau, General Dynamics President; Standley H. Hoch, Executive Vice President-Finance; Asaph H. Hall, Vice President and General Manager of Data Systems Division, and Bernard J. Breen, Division Vice President and Eastern Center Director.

The 60,000-square-foot addition, now fully occupied by Data Systems personnel, nearly doubles the Eastern Center's existing 72,000-square-foot facility opened there 10 years ago and allows the DSD Eastern operation — which services the Electric Boat and Land Systems divisions —

(Continued on Page 2)



Joint Effort. U.S. Senator Christopher J. Dodd of Connecticut and General Dynamics Chairman Stanley C. Pace join in cutting the ceremonial ribbon at the official opening of Data Systems' new Eastern Center addition at Norwich, Conn.



Data Systems' New Eastern Center addition at Norwich, Conn.

Ribbon-Cutting Ceremony Officially Opens New Data Systems Building in Norwich

(Continued from Page 1)

to keep pace with an employee population that has grown from 200 to 400.

The new building houses the Center's expanded computer, teleprocessor and microfilm facilities, as well as new office areas, conference rooms and a cafeteria which can seat up to 250. The building has backup power systems, both electrical and mechanical, to minimize any possibility of computer failure.

Pace, who was visiting DSD's Eastern Center for the first time, cited the key role played by Data Systems in the company's overall operations, saying the employees "deserve a good share of the credit for providing the tools needed in various divisions to meet schedules and contain costs."

Pace acknowledged the "critical" contributions made by the Eastern Center to the launching, scheduled for later that day, of the attack submarine *Helena* at Electric Boat. "Eastern Center people don't swing hammers or operate welding torches," Pace said. "They're not painters or riggers. But how well the Eastern Center people do their job directly affects how well General Dynamics builds submarines."

"When we talk about any aspect of our manufacturing operation that is computerized — and there is more and more of that each day — the foundation of that operation comes from the Data Systems Division," he said.

"Data Systems will continue to play its key role as General Dynamics moves into the future," said Pace, "in continuing our excellent record in designing and manufacturing weapon systems, in developing new technology . . . by helping to increase productivity . . . and by helping us to improve the effectiveness of management decisions and controls through computers."

Pace then introduced Senator Dodd and Congressman Gejdenson, both of whom had high praise for the company's foresight and confidence in locating, a decade ago, in the Norwich Industrial Park.

"We're proud of General Dynamics in Connecticut," Senator Dodd said, "and I'm proud indeed to be representing the group of people who work in this facility and to represent a corporation in this state that contributes to the health and well-being of our country."

Congressman Gejdenson told employees that "my job in Washington is made easy by the quality of the product and the excellence of the work that you do." There is a "clear respect for the men and women of Electric Boat, this division and the other divisions and for the job they do," he said.

At the start of the ceremony, Eastern Center Director Bernie Breen read a special congratulatory message from Governor William O'Neill, who lauded the company for "its many contributions to the progress of Connecticut."

Fast-Attack Submarine Helena Is Christened In an Impressive Ceremony at Electric Boat

(Continued from Page 1)

a finer product year in and year out. I'm proud to be associated with it."

Pace also introduced Helena (Montana) Mayor Russell Ritter, who headed a visiting contingent from the "Big Sky" state and who called the naming of the *Helena* "a tremendous honor."

"May this newest *Helena* be a further example to any would-be adversary that 'Old Glory' will always fly," Ritter said.

Helena is the first submarine and fourth U.S. Naval ship to carry the name of the Montana capital. Among those present at the launching were crew members from the light cruiser *Helena*, which was sunk during World War II, and the heavy cruiser *Helena*, which served in the Korean Conflict.

Other speakers on the program included Fritz G. Tovar, Vice President-General Manager of Electric Boat, and Vice Adm. William H. Rowden, Commander of the Naval Sea Systems Command.

Tovar welcomed the Montana visitors and former crew members, saying that the new submarine would "carry forth the proud heritage generated by the city and those fine ships."

John Stockford, former Wet Dock Steel Trades Superintendent who retired June 27th after 37 years with Electric Boat, acted as "triggerman" for the launching.

Serving as Matrons of Honor for Mrs. Busey were her daughters, Mrs. Angela Presto and Mrs. Nancy Wheeler, and Mrs. Linaire Ritter, wife of the mayor of Helena.

The United States Navy Northeast Band from Newport, R.I., provided music for the ceremony.



Ship Christened. Mrs. Jean Cole Busey is right on the mark with a major league christening swing as she sends the attack submarine *Helena* down the ways. Cheering their mother on are Mrs. Angela Presto (left) and Mrs. Nancy Wheeler (center), both of whom served as Matrons of Honor at the June 28th ceremony at Electric Boat. The *Helena* is the 22nd 688-class submarine built at Groton, Conn.

Junior Achievement Students Interested In Jobs at Fort Worth

A group of recent area high school graduates, all of whom are winners of Junior Achievement scholarships, was given a briefing and tour of Fort Worth's facilities in late June.

Following the visit, several of the students expressed interest in coming to work at the division four years from now after they have received engineering or business degrees.

"These are bright, young people and there is an extremely competitive market for bright, young people," said George L. Davis, Vice President of the F-III Program and host of the visit. "We saw this as a positive way to help in our 1989-90 recruiting efforts."

Davis was joined by Charles Anderson, Vice President-Engineering, Dwain Mayfield, Director of Domestic Marketing, and Roy Knepper, Director of Facilities, in briefing the young men and women on career opportunities and in taking them down the mile-long F-16 assembly line.

One of the students on the tour, Ricardo Rodriguez, will attend Texas A&M University and major in aerospace engineering. Under a new program, begun in cooperation with Junior Achievement, he will have an advisor from Fort Worth to offer suggestions on course selection and other pertinent areas.

Ed Petrushka, Director of Structures and Design, will work with Rodriguez in his freshman and subsequent years, recommending curricula and helping him prepare for a career in the aerospace industry.

Bruce Freeman, Director of Operations for Junior Achievement, said he felt the briefings and the mentor program "are very useful. The experience they had was not only informative, it was also very valuable in giving them the opportunity to interact with business professionals in a business environment."

"And in Rick's case, the counseling of a veteran aerospace engineer like Ed Petrushka will be an invaluable aid to his education. We appreciate not only Ed's individual efforts, but those of the management from General Dynamics who are giving him the time and support in working with us."

Pakistani Distributor Of Propeller Aircraft Appointed by Cessna

Cessna Aircraft Company has appointed Pakistan General Aviation Ltd. to be its distributor of propeller aircraft in Pakistan.

Located at the Walton Airport in Lahore, Pakistan General Aviation Ltd. (PGAL) has been a Cessna sales representative since 1976. As a distributor, PGAL will handle all of Cessna's piston and propjet aircraft, including the new Caravan I utility propjet.

The chairman of PGAL, Javaid A. Zia, is one of Pakistan's leading industrialists. His company recently sold a Cessna Conquest II propjet to the Governor of Punjab, one of Pakistan's four provinces.

There are about 120 Cessna aircraft in Pakistan, representing about 65 percent of the general aviation fleet in that country.

Executive Jet Aviation Orders 8 Cessna Citations For Its Charter Fleet

Executive Jet Aviation of Columbus, Ohio, the oldest and largest executive jet charter operation in the United States, has ordered eight Cessna Citation S/II fanjets as the first step in converting to an all-Citation fleet. EJA currently operates 14 aircraft.

The Citation S/II's join a Citation III already in the EJA fleet and will replace Learjets beginning with first deliveries this summer. Two aircraft per month will be delivered beginning in July.

Cessna Chairman Russell W. Meyer Jr. said this was one of the largest fleet orders Cessna has received.

Jack D. Coffman Appointed Vice President-Production At Space Systems Division

Jack D. Coffman has been named Vice President of Production at the Space Systems Division.



Coffman
Coffman, 45, transfers from Convair, where he was Director of Fabrication and Tooling. In his new position, he will be responsible for the scheduling, production, manufacturing engineering and industrial engineering functions for Space Systems. He joined the company in 1966 at Fort Worth, serving in positions of increasing responsibility, including Quality Assurance Manager, Manufacturing Director and General Manager of the division's Abilene Facility. He was Director of Production Planning and Control at Fort Worth before transferring to Convair in 1983. Coffman attended Texas Wesleyan College and Abilene Christian University.

Walter P. Robertson Named Electronics Vice President, Navy ATE Program Dir.

Walter P. Robertson has been named Vice President and Program Director-Navy Automatic Test Equipment at the Electronics Division.

Robertson, 44, began his career with General Dynamics in 1966 as an engineering administrative assistant at Fort Worth. In 1979, he transferred to Electronics as an engineering manager, later serving in positions of increasing responsibility in Product Support and Program Offices. His most recent assignment was Program Director for Automatic Test Equipment for the U. S. Air Force B-1B strategic bomber.



Robertson
Robertson holds a bachelor's degree from Texas Christian University. He received the Silver Knight of Management Award in 1985 from the National Management Association.

Electronics is competing for the Consolidated Automatic Support System (CASS), the U. S. Navy's next-generation automatic test equipment that will be used to check out the avionics systems of carrier-based aircraft as well as a variety of shipboard electronic systems. Electronics is a member of one of two industry teams that were awarded pre-full-scale development contracts in 1985 for the CASS.

Robertson holds a bachelor's degree from Texas Christian University. He received the Silver Knight of Management Award in 1985 from the National Management Association.

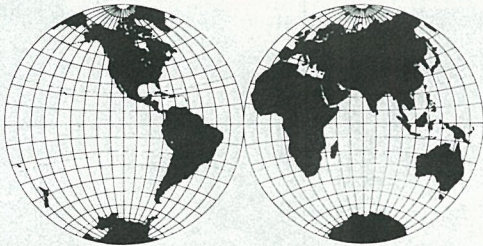
Savings and Stock Investment Values

	Annual Rate of Return for the 12 Month Period Ending:		
	April 1984	April 1985	April 1986
Salaried			
Government Bonds	6.2%	11.6%	16.2%
Diversified Portfolio	(6.0)%	25.1%	39.6%
Fixed Income	12.2%	12.5%	12.2%
Hourly			
Government Bonds	6.2%	11.6%	15.6%
Diversified Portfolio	(6.3)%	24.6%	39.9%
Fixed Income*	N/A	N/A	12.3%
GD Stock Closing Price	\$50.25	\$66.62	\$79.37

* Fixed Income effective 6/30/85



Safety Recognized. Six divisions and subsidiaries have been honored for their excellence in safety performance in 1985. General Dynamics President Oliver C. Boileau presented plaques to the winners recently at a Safety and Health Managers meeting in St. Louis. Shown above (left to right) are: Randy McPheeters, Convair; Walt Hill, Fort Worth; Boileau; Doug Kirp, who represented winners Material Service and Marblehead Lime; Ed Langmaid, Electronics, and Hub Lynch, DatagraphiX.



Around the World

CHQ: Rollin C. Williams joined as Corporate Director-Employee Benefit Fixed Income Investments . . . David W. LaCount as Subcontract Auditor . . . Daniel Sorenson as Auditor . . . Phillip J. Cooper as Consolidation Accounting Corporate Manager . . . Mark W. Krawczyk as Information Systems Auditor . . . Victoria S. Mueller as Chief Librarian . . . H. Gerald Staub as Corporate Manager-Legislative Affairs & Associate Government Relations Counsel . . . Lawrence B. Lucas as Senior Auditor . . . Paul M. Bradburn transferred from Fort Worth and was promoted to Government Business Planning Manager . . . Richard A. Baldrige transferred from Space Systems and was promoted to Corporate Financial Planning Manager . . . Robert D. Cuthbertson transferred from Convair and was promoted to Financial Planning Manager . . . Robert L. Undersander transferred from Fort Worth and was promoted to Corporate Langley Representative . . . Jack D. Paige transferred from Electronics and was promoted to Quality Assurance Corporate Director . . . Roger A. Krone transferred from Fort Worth and was promoted to Corporate Finance Corporate Manager . . . Roger C. Rawls transferred from Electronics to Corporate Manager C3I & Electronics Systems . . . George W. Sehr Jr. was promoted to Internal Audit Corporate Manager/Detroit . . . Kevin A. Levesque to Corporate Headquarters Office Services Supervisor.

Fort Worth: Harold R. Tomlinson was appointed to Engineering Administration Director . . . Houston J. Kauffman was promoted to Division Competition Advocate . . . Cheryl L. Bender and Ross Meadors Jr. to Logistics Supervisor . . . Eric N. Bundy to Finance Chief . . . Jesse F. Cole and Rodney L. Behrends to Inspection Supervisor . . . Harry G. Davis to Material Cost Supervisor . . . Van L. Ely to Financial Supervisor . . . Ralph A. Froehlich to Human Resources Chief . . . Frank W. Fuqua to Engineering Group Supervisor . . . Bobby L. Hornsby, James L. Johnson and Terrence M. Schindler to Engineering Chief . . . Earl C. Johnson to Production Control Manager . . . Nathan W. McGrew IV to Planning Manager . . . Joe M. Middlebrook to Engineering Administrative Manager . . . Edwin J. Miller to Material Control Manager . . . Jerry M. Mullins to Assembly Manager . . . Matthew J. Quinn and Robie D. Notestine to Tooling Supervisor . . . William K. Skinner to Engineering Administrative Group Supervisor . . . Harold K. Sloan to Industrial Security Supervisor . . . John E. Trevino to Field Service Engineer . . . Jeff P. Tucker and James A. Kelley to Manufacturing Control Supervisor . . . Douglas A. Welker to Administrative Services Chief . . . Knick J. Arther to Finance Manager . . . James L. Beeler, Robert W. Jackson and Philip W. Watson to Material Planning Supervisor . . . Joe M. Blackmon and Steven K. Waters to General Foreman . . . Mary V. Burton to Estimating Chief . . . Mark J. Carter to Subcontract Management Coordinator . . . Michael H. Kays to Technical Group Supervisor . . . Lewis M. O'Shields to Material Control Chief . . . William A. Slay to Senior Logistics Contract Analyst.

Electronics: Ross C. Houston was appointed to Engineering Director . . . Duane M. Harris was promoted to Project Manager . . . Dustin R. Bergeron and Raymond E. Piasecki to Engineering Section Head . . . Michael J. Jorgens to Project Field Engineer . . . Juan A. Trinidad to Senior Test Engineer . . . Mark R. Woodward to Material Supervisor.

Space Systems: Robert R. Bell was promoted to Master Scheduling Supervisor . . . Clarence L. Combs and Henry D. Thomas to Group Engineer . . . Robert E. DePuis to Program Estimating Manager . . . Jesus D. Gonzales and Gary R. Rankin to Estimating Chief . . . Walter L. Potter to Scheduling Supervisor . . . Donald S. Rutherford to Contracts Manager . . . Troy D. Shook to Industrial Engineering Chief.

DatagraphiX: Gordon A. Hofer was appointed to Support Engineering Director . . . John J. Lemperle to Production & Industrial Engineering Director . . . Robert D. Mee to Logistics Support Director . . . Raymond C. Mosher to Quality Assurance Director . . . Bruce J. Rogers to Development Engineering/COM Products Director . . . Bennie G. Watson to Product Service Training Director . . . Stuart A. Aaron and Jonathan C. Forrester were promoted to Area Supervisor . . . Sue E. Willis to Material Control Supervisor . . . Richard A. Wooler to Material Planning Supervisor.

Land Systems: Darrell M. Spencer was appointed to Health & Safety Director . . . Victor C. Gillespie was promoted to Plant Services Manager . . . Dale R. Stucke to Financial Specialist . . . Christopher J. Anderson to Quality Assurance Engineering Supervisor . . . Richard W. Gray to Accounting General Supervisor . . . Michael D. Peltier and Paul J. Valcke to Senior Quality Assurance Engineer . . . Gerald A. Rochinski to Plant Engineering Chief . . . Gregg L. Glowacki to Program Control Chief . . . Eugene G. Hoefle to Engineering Program Management Chief . . . James K. Garrett and Gamil M. Rizk to Engineering Supervisor . . . George A. Leykauf Jr. to Quality Assurance Engineering Specialist . . . John W. Salmon to Quality Control Engineering Senior Supervisor . . . William L. Collins to Program Management Specialist . . . Ricky D. Rowe to General Foreman.

DSD: At Western Center, Pamela L. Castaneira was promoted to Computer Systems Analyst . . . Nora R. Horne to Data Administration Chief . . . James F. Parlier to Engineering Software Chief . . . Laura D. Chancellor and Pam A. Young to Engineering Documentation Representative . . . David M. Trailer to Senior Software Engineer . . . Ronald A. McVay to Operations Services Supervisor. At Central Center, Oliver D. Kote to Operations Services Supervisor. At Eastern Center, Anthony L. Matthews to Engineering Software Supervisor . . . Michael R. Larche to Business Systems Development Supervisor.

Convair: William C. Crooks was promoted to Financial Chief . . . Janice M. Eldridge to Purchasing Agent . . . Christopher F. Lore to Manufacturing Control Operations Supervisor . . . David M. McMillan to Manufacturing Operations General Supervisor . . . Brian S. Ruark to Quality Control Chief . . . Donna Sandsmark to Operations Administration Chief . . . Peter W. O'Leary and Thomas D. Shemanski to Group Engineer . . . Adrian J. Smith Jr. to Program Engineering Manager . . . John T. Talbott to Procurement Manager . . . Paul J. Townsend to Configuration and Data Management Manager . . . Robert J. Wellington to Engineering Chief . . . George W. Wilcox to Quality Assurance Chief.

GENERAL DYNAMICS

World

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Z. Joe Thornton

Three Employees Belong to Unique Helicopter Squadron in U.S. Navy

When it comes to being ready for active-duty service, three General Dynamics employees in San Diego probably are more ready than most military reservists.

Because they are members of the U.S. Navy's only combat search and rescue squadron, the three men, Rob Meyer, Joe Cimenski and Guy Wilson, stand ready to be deployed anywhere in the world on 72-hour notice.

There is no active-duty helicopter squadron in the Navy with the same assignment — and no other reserve squadron, either — so when a search and rescue problem arises in a combat environment, the Navy can only call on their unique unit.

During the week, you'll find Convair's Meyer at the General Dynamics Lindbergh Field plant, where he is chief turboprop pilot for Convair flight operations. Cimenski, an engineering specialist for Space Systems Division, designs Atlas and Centaur mechanical and fluid systems. Wilson recently left active duty with the Navy as an aviation electrician's mate. He now inspects Tomahawk cruise missile assemblies.

On weekends and during annual active-duty tours, the three reservists practice their hard-won skills with Helicopter Combat Support Squadron Nine (HC-9), based at North Island Naval Air Station in San Diego.

Meyer and Cimenski hold the rank of commander and are pilots of the Sikorsky HH-3A helicopter. Wilson is an aircrewman and qualified "wet swimmer." Their mission is to rescue aircrew survivors, and, to remain sharp and combat ready, they train with fleet forces at Navy or Marine Corps air installations.

"We simulate a variety of rescue situations as we train," said Meyer. "Our primary mission is over-the-water rescue, but we also do nighttime rescue, single aircraft sneak missions or going in to drop a Navy SEAL team. With any mission, we use the tactics that will give us the greatest possibility of success, given the terrain and the level of threat."

Nighttime missions are especially challenging, Meyer said, because the operations involve low-level flight during which the pilots must wear special night-vision goggles to allow them to see in the dark.

Meyer has been flying most of his life. A graduate of the U.S. Naval Academy, he spent seven years on active duty before entering the reserves in 1977. Before coming to work for Convair flight operations in 1980, he flew one



Navy Reservists (left to right) Rob Meyer, Guy Wilson and Joe Cimenski and Their Sikorsky HH-3A Helicopter

year as a missionary pilot for the Catholic Church in Papua New Guinea.

The trio proudly pointed out what makes HC-9 unique. "Typically, the Navy has a complementary reserve squadron to back up an active-duty unit," Cimenski said. "We have no active-duty complement. If they need the search and rescue experts right now, we're the ones."

HC-9 has an outstanding reputation throughout the Navy, according to Cimenski. "We've received a lot of

awards and decorations for a reserve unit," he said. "We've also logged 22,000 accident-free flight hours since the unit was commissioned." Cimenski has been with the unit since commissioning and is one of its senior officers.

Asked why he serves in the reserves, Cimenski gave a simple answer: "I love to fly." That feeling was echoed by Guy Wilson, who added that he was looking forward to this summer's tour at Fallon Naval Air Station in Nevada and also to training with the fleet.

Manufacturing Resource Planning Relies on Computers and Humans

Fort Worth is moving closer to divisionwide implementation and use of Manufacturing Resource Planning (MRP), an integrated computer-supported system for processing and providing information at every level of business.

MRP is designed to assist management in the control of division master schedule, cash flow, labor loading, factory capacity planning, shop floor control, inventory distribution and purchasing. The system will be used by Manufacturing, Purchasing, Marketing, Quality Assurance, Engineering, Contracts, Finance, Logistics and all program offices.

MRP will provide such benefits as inventory reductions, reduced shortages, reduced overtime, improved scheduling and better management visibility of true needs and priorities. In addition, other benefits are expected to result from improved communication the system will provide. "With MRP, we're all working according to the same plan," said C.L. "Robbie" Robeson, MRP Program Manager.

Although MRP relies heavily on computer technology, "the human factor is of vital importance to its implementation and maintenance," Robeson said. "The computer handles the simple, repetitive, consistently logical work of information processing, freeing managers and planners to manage, solve problems and make decisions," he said. "People must be educated to understand that they, not some computer program, are the key part of the system. People are our most important resource."

Since 1983, when MRP development began at Fort Worth, about 2,000 division employees have attended MRP-related instruction.

Since MRP will ultimately be used divisionwide, more than 17,000 employees will be scheduled to receive some type of training for the system over the next two years, Robeson said.

A pilot MRP system has been implemented in Fort Worth's Electronic Fabrication Center, and a manufacturing pilot is being introduced in the division's Final Assembly and Manufacturing Support Equipment areas.

MRP Project Teams have been formed in the Material Department, factory and other departments to oversee the implementation of various aspects of the system.

Robeson said MRP will facilitate many quality and productivity improvements and is a significant change in the way the division does business.



The Human Touch. Fort Worth employees (seated, left to right) Herb Parkinson, Sam Owens, Dan Shubert and Tom Rieber receive hands-on training in computer transactions related to the division's Manufacturing Resource Planning System. The session is being conducted by Les Couch (standing).

Sarah Short Austin Named To Direct Corporatewide Community Relations Efforts

Sarah Short Austin has been named Corporate Director-Community Relations for General Dynamics. She had been Executive Director and Board Member of the Greater



Austin

Cleveland Roundtable, an organization comprising executives and leaders of business, labor, government, philanthropy, religious groups and civic organizations. She will direct and coordinate General Dynamics' corporatewide efforts in community affairs.

"Sarah Austin brings to this new position extensive experience in working to develop partnerships between elements in the private sector and the community," said Stanley C. Pace, Chairman and Chief Executive Officer. "We are pleased to have someone of such demonstrated competence to undertake this challenging assignment."

Austin also served as the Albert A. Levin Professor of Urban Studies and Public Service at Cleveland State University. She was Executive Vice President of the National Urban Coalition and served at the federal level with the U.S. Price Commission and the then Department of Health, Education and Welfare. She has also held management and research positions with the Urban Systems Development Corporation, the Westinghouse Learning Corporation and private agencies in Washington, Cleveland, New Haven and Boston.

Austin has devoted considerable attention to educational and civic endeavors, serving as a Member of the Board of Trustees of Case Western Reserve University and the Morehouse School of Medicine and on the Board of Directors of the Southern Education Foundation. She has served as a member of the National Arthritis, Diabetes, Digestive and Kidney Diseases Advisory Council of the National Institute of Health and as a director of the Medical Life Insurance Company.

Austin received a Bachelor of Arts degree from Fisk University and a Master of Science degree in Social Administration from Case Western Reserve University. She has been the recipient of numerous awards and honors.

Land Systems Division Grandmother Earns Degree After 13 Years

A Warren Logistics Center grandmother of six recently received her college degree following the completion of 13 years of part-time study.



Ford

M. Lucille (Lucy) Ford, Spares Control, earned a bachelor's degree in business administration from Mercy College, ending an effort that began in 1973 at Oakland Community College. She was assisted in her college pursuit by the General Dynamics Tuition Refund Program.

Ford's eldest daughter, Gail, received a master's degree in computer education one week after Ford earned her degree. A second daughter, Sheri, is in her third year of medical school at Wayne State University, and Meri, her youngest daughter, has an associates degree.

Skills Training Conducted

Supervisors at Scranton recently completed interpersonal skills training sessions as part of Land Systems' effort to develop a common management philosophy and style.

The sessions, conducted by Richard B. Doty, Machining General Foreman, dealt with communication, solving motivational and ability problems and extending skills of leaders in working with those who report to them. The sessions included lectures, role playing and video presentations, which were designed to stimulate feedback and discussion.

Company Is Keeping Its Promise to Bring Ethics Program Message to All Employees

General Dynamics will use whatever means are necessary and available to bring its Ethics Awareness Workshops to all of its more than 100,000 employees in the United States and abroad.

Linda M. Trendle, a hearing-impaired Senior Word Processor at Corporate Headquarters, under normal conditions would not have been able to participate in the give-and-take of the group discussions that are part of the Ethics Program Workshops. "Although Linda can read lips pretty well, she couldn't have kept up with what everyone was saying," observed Donna J. Sargent, Text Processing Administrator and Trendle's immediate supervisor.

"I'm really pleased that the company went to the trouble to get me an interpreter," said Trendle. "I liked it very much and understood what was going on at all times."

"The objective of the Ethics Program is to reach more than 100,000 people," said Kent Druyvesteyn, Corporate Ethics Program Director. "That is significant in two ways. Just in sheer numbers, we are trying to bring the program to about as many employees as there are pupils in the

Dallas school system, or almost twice as many as in the St. Louis school system."

"The diversity of the population we're trying to reach is also important, from educational, socioeconomic and linguistic points of view," he said.

Druyvesteyn pointed out that Ethics Awareness Workshops in Spanish and other foreign languages may be conducted at several company locations if a significant need is found for them. "Ethics Program Directors at these locations are now investigating this possibility," he said. "In addition, managers in our field offices in the United States and foreign nations are not only attending Ethics Awareness Workshops, they are also participating in train-the-trainers sessions in order to train the staffs of their respective offices."

"Some of these staff members may be foreign nationals," said Michael C. Lucero, Corporate Headquarters Ethics Program Director, "but we are training them because they are General Dynamics employees."

"All of this illustrates the complexity and the extent of the challenge in front of us," said Druyvesteyn.



Ethical Signs. Susan P. Russell (center), Staff Interpreter of Deaf Services of St. Louis, interprets remarks of Michael C. Lucero (background left), Corporate Headquarters Ethics Program Director, to Linda M. Trendle (foreground right), a hearing-impaired senior word processor at Corporate Headquarters, during an Ethics Awareness Workshop held last month.

U.S. Air Force Receives Its 1,000th F-16

The U.S. Air Force took delivery of its 1,000th F-16 multimission fighter on July 8th at Fort Worth. The milestone aircraft is the 1,572nd delivered to 10 air forces worldwide since the first F-16 was delivered to the USAF in August 1978.

Of the worldwide production total, 1,178 have been delivered from Fort Worth, 216 from the Fokker plant in the Netherlands and 178 from SABCA near Brussels, Belgium.

The USAF's 1,000th Fighting Falcon, a single-seat F-16C, is a truly multinational product. Among its major components are a forward fuselage section built in Fort Worth, a center fuselage section built by Fokker and an aft fuselage section built by SONACA in Belgium. The air-

craft's left wing was produced by SABCA, and the right wing by Israel Aircraft Industries.

The aircraft has been assigned to the USAF's 86th Tactical Fighter Wing at Ramstein Air Base, West Germany.

The USAF currently has 1,859 F-16s on order and is planning to procure a total of 3,047 aircraft through the mid-1990s to modernize its active forces, the Air Force Reserve and the Air National Guard.

The U.S. Navy and four additional foreign air forces also have F-16s on order.

Fighting Falcons in service worldwide passed the one million flight-hour mark last year.

Five Stinger Missiles Are Tested Successfully

Five Stinger missiles built by Valley Systems Division have successfully intercepted five targets at White Sands Missile Range, N.M.

The tests were part of the Army's Stinger "fly to buy" program, requiring test firings of certain quantities of missile rounds before a production lot is accepted by the Army. The five rounds, selected at random from the Valley Systems production line, were part of the 28th Stinger production lot, all of which have been accepted by the

U.S. Army.

Three additional rounds, part of the U.S. Army Stinger Reliability Assessment Flight Test (RAFT) program, also successfully engaged targets. The RAFT program was established to ensure fielded Stinger missiles retain the reliability demonstrated during the "fly to buy" program.

Stinger, a shoulder-fired antiaircraft missile that employs infrared homing guidance, is deployed with the armed forces of the U.S. and several allied nations.

Roger Cripliver Earns Title as Fort Worth's Unofficial Aviation Historian

Roger Cripliver, who has been fascinated with aviation since Charles A. Lindbergh made his historic New York-to-Paris flight in 1927, is acknowledged as Fort Worth's unofficial historian.

Since that time, he has worked for Cessna Aircraft Company as a production planner and aircraft assembler and served as an Army Air Corps crew chief and flight engineer, acquiring considerable knowledge about airplanes in the process. He also has been at Fort Worth since 1947, when the division was part of Consolidated Vultee.

Cripliver, a logistics specialist, has been called the division's unofficial historian because he is an excellent resource for information about company-built aircraft. "I specialize in General Dynamics aircraft, beginning with those built by the first predecessor company, Gallaudet Engineering, which was organized in 1908," he said.

As a result, he has been able to assist others at the division many times on projects requiring historical data. He has also provided information to outside researchers and aviation writers.

Many people became interested in aviation only briefly after Lindbergh's flight, Cripliver said, "but my interest didn't wane at all. It just grew."

In following years, through his participation in the Boy Scouts of America, Cripliver was able to meet such aviation pioneers as Adm. Richard E. Byrd and Army Air Corps pioneer H.H. "Hap" Arnold.

Cripliver learned to fly while a member of the Air Scouts in Oklahoma City, but, although he flew some during his Army Air Corps service, he did not pursue the activity any further. "It was fun, but I was never that interested in actually flying," he said. "I was more interested in the machines that fly."

Cripliver's employment with Cessna began in 1941 and ended in 1947, with a break for wartime military service in between.

In 1972, Cripliver was instrumental in forming the



Roger Cripliver in Front of B-58, His Favorite Airplane, at the Southwest Aerospace Museum at Fort Worth

volunteer organization that maintains and operates the nonprofit Southwest Aerospace Museum, an exhibit of military aircraft located just outside Fort Worth's main plant gate. The museum has 11 planes, including two Fort Worth-built aircraft, a B-36 and a B-58. The aircraft are all on loan from U.S. Air Force and U.S. Navy museums.

Cripliver has written descriptive information about the airplanes for distribution at the museum and assisted the organization in its efforts to acquire additional aircraft. Several other Fort Worth employees also belong to the

museum group.

Of all the aircraft Cripliver has studied, his favorite is the B-58 Hustler, because "it is unique, and so many firsts were accomplished with it." He plans to contribute articles to aviation magazines in the future, and the B-58 will be one of his first subjects.

Cripliver said he has never tired of doing aviation research. "It has all been interesting and I've really enjoyed it. Everytime I look something up, I learn something new," he said.

Ronald D. Stoneburner Helps Direct People in the "Human Race"

Volunteer service to his community is very rewarding to Ronald D. Stoneburner, Pomona's Director of Contracts, because he always is able to see the effects of his efforts.

Stoneburner is Vice President of the Volunteer Center of the Greater Pomona (Calif.) Valley, which directs people who want to aid a charitable cause to the agency for which their skills and personality are most appropriate. The Center also tries to fill the requirements of the most needy agencies first.

Stoneburner contributes more than 20 hours a month to the Center, primarily as Chairman of the local Human Race, part of an annual statewide 10,000-meter run or 20,000-meter walk sponsored simultaneously by 20 Volunteer Centers throughout California.

"The rewarding thing about Volunteer Center action and the Human Race is that you can see your contribution have an effect," said Stoneburner.

This year the third annual 10K and 20K were held in May through the campus of California Polytechnic State University at Pomona. The events were open to everyone, and age, sex or physical handicaps were not factors or deterrents.

"This year, a special Corporate Challenge was issued to local businesses, inviting teams of runners or walkers to

participate to raise money for their favorite community program," Stoneburner said. "Each company picked an agency or project and decided how much money it would raise. Team members then signed up sponsors."

"More than 600 walkers and runners participated," Stoneburner said. "Although the exact amount of the pledges has yet to be tallied, we are fairly certain that we will meet our goal to exceed last year's total of \$42,000."

All proceeds go to the agencies that participate and to the Volunteer Center. All awards, services and expenses connected with the race are donated.

"The Human Race Corporate Challenge is just in its infancy and is destined for a bright future as businesses in the area share in the camaraderie and feeling of contribution to activities in our area," Stoneburner said.

Rafer Johnson, who was an Olympic Gold Medal winner, National Head Coach of the Special Olympics and President of the California Special Olympics, served as the Corporate Challenge Chairman.

In addition to directing volunteers to one of the more than 300 eligible member agencies, the Volunteer Center conducts training seminars for agency personnel on how to recruit volunteers.



Competition Set. Pomona Division's Ronald D. Stoneburner (left) and Ross Kolodge, Vice President of Pomona First Federal Savings and Loan, plan the start of the third annual Human Race on the campus of California Polytechnic State University at Pomona, Calif.

Land Systems Taking Early Steps in Increased Emphasis on Quality

Land Systems has involved its production work force in a new program called Statistical Process Control (SPC) as part of overall efforts to continue improving quality.

The SPC provides an early warning system if any manufacturing process is not meeting specifications. It involves taking measurements of the product during the manufacturing operation at the time it is built, not a day or a week or a month later.

"My experience with SPC in the automotive industry convinced me that monitoring processes and keeping them in control via the production work force are major steps in building products correctly the first time," said Robert W. Truxell, Vice President and Land Systems General Manager.

The key expert in SPC is the one most knowledgeable about a manufacturing operation — the one doing the job.

The readings are statistically charted and analyzed to determine if the process is in control or if it will subsequently produce bad parts. If it's the latter, a Special

Emphasis Team (SET) and SPC coordinator (team leader) go to work to determine the cause and fix it before bad parts are produced.

The SET at each plant is made up of representatives from Manufacturing Engineering, Quality Engineering, Industrial Engineering Material and the expert — the one who knows the operation best — the machine operator.

The team brainstorms ideas for actions needed to correct the process. The result is quality built into the finished product.

Land Systems started putting in SPC with a two-day awareness and training program for about 70 management personnel last July.

The first training sessions for machine operators, inspectors, foremen, general foremen, supervisors, engineers and manufacturing engineers were started last November in each of the four Land Systems plants. The second class started after the holidays, the third started in February, and future training classes are planned.

The results of the training in the form of SPC charts are beginning to appear in the plant manufacturing areas.

The old way of doing business — rework or repair of a product found defective by inspection after it has been built — has been described by U.S. Air Force Gen. Robert T. Marsh as the "hidden factory" in industry. The hidden factory has many other costs such as reinspection, scrap and loss of machine time, all of which make a product, including a tank, cost more than it should. The SPC goal at Land Systems is to build it right the first time and eliminate excess costs.

"Better tanks will be built," said Robert F. Schwalm, Vice President-Manufacturing. "If we don't do it, some other company or country will. We are committed to changing the way we do business by implementing SPC. Change is always difficult, but we are investing valuable training time and human resources to understand what each of us must do to make it work."

Space Systems Division Is Phasing Down Its Shuttle/Centaur Program for NASA

The National Aeronautics and Space Administration (NASA) has announced the cancellation of the Shuttle/Centaur program. The decision does not affect Centaur programs other than those which were planning to use the Space Shuttle.

A General Dynamics statement said, "The NASA decision to terminate work on the Shuttle/Centaur program is disappointing but understandable in light of the greatly increased emphasis on safety in the Shuttle program."

The company's Space Systems Division is now in process of the program phasedown and working with government representatives to make maximum use of existing assets that may be adaptable to other versions of Centaur.

Dr. Alan M. Lovelace, Vice President and Space Systems General Manager, addressed the more than 1,200 employees assigned to the Shuttle/Centaur effort following the NASA announcement.

"It is our intention to go forward," he said, "and continue to play an active role in our country's space program. Those of you who were directly involved with Shuttle/Centaur are to be congratulated for engineering and producing hardware that we believe would have benefited both the military and scientific communities. We can all be proud of that."

Lovelace pointed out that the company has a long and proven tradition in space and an unquestioned excellence in designing, building and launching quality systems.

"We respect NASA's decision," he said, "and regret that all your hard work will not afford you the opportunity to see the culmination of those efforts in support of the nation's space requirements."

Space Systems was under contract to produce seven Centaur upper stages to fly from the Space Shuttle's cargo bay.

Hardware for the first two planetary missions for NASA — Galileo to Jupiter and Ulysses to the sun — had already been delivered and undergoing tests in Florida.

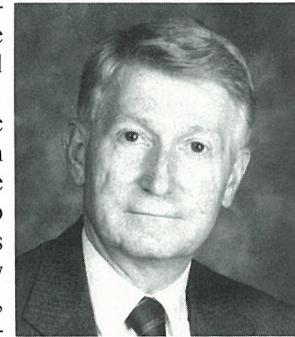
NASA is now initiating efforts to examine alternatives for these and other major NASA planetary and scientific payloads which were scheduled to utilize the Centaur upper stage.

Craig Haines Jr. Promoted To Asst. General Manager-Material at Electric Boat

Craig Haines Jr., Director of Purchasing at Electric Boat for the past seven years, has been promoted to Assistant General Manager-Material and will oversee the division's purchasing and material operations.

Haines joined Electric Boat as a technical writer in 1962 and transferred to the Planning Department two years later. He held positions of increasing responsibility in the Planning Department, then became Deputy Program Manager of the SSN 688-class program in 1973, a post which he held until his appointment as Director of Purchasing.

Prior to joining the division, Haines served three years as an officer in the U.S. Navy. He holds a bachelor's degree from Dartmouth College and a Master of Business Administration degree from the University of Rhode Island.



Veteran Weightlifter James C. Corbett's Goal Is Keeping in Top Shape, Not Bodybuilding

James C. Corbett Jr., a production control expediter at Fort Worth, has introduced many of his fellow employees to his principal hobby, weightlifting, because he believes it can offer them the same benefits he says it has given him: health and self-confidence.

For the last 10 years, Corbett has been lifting weights for about two hours a day, four days a week. He does not consider himself a bodybuilder, though, and he seldom tests himself by trying to press a maximum amount of weight. "I'm in it strictly to keep in shape," he said. "My goal is fitness, not brawn."

Corbett, 29, started lifting weights after he graduated from high school. Just as he has encouraged an interest in weightlifting among many of his acquaintances, he was introduced to the sport by a neighbor who was a weight training coach at Texas A&M University. "When I saw what it had done for him, I decided to give it a try," Corbett explained.

Since he feels that diet should play a large part in an overall fitness lifestyle, Corbett avoids fatty foods and red meats and eats a lot of fish and chicken. "I once went two years without eating a hamburger," he said.

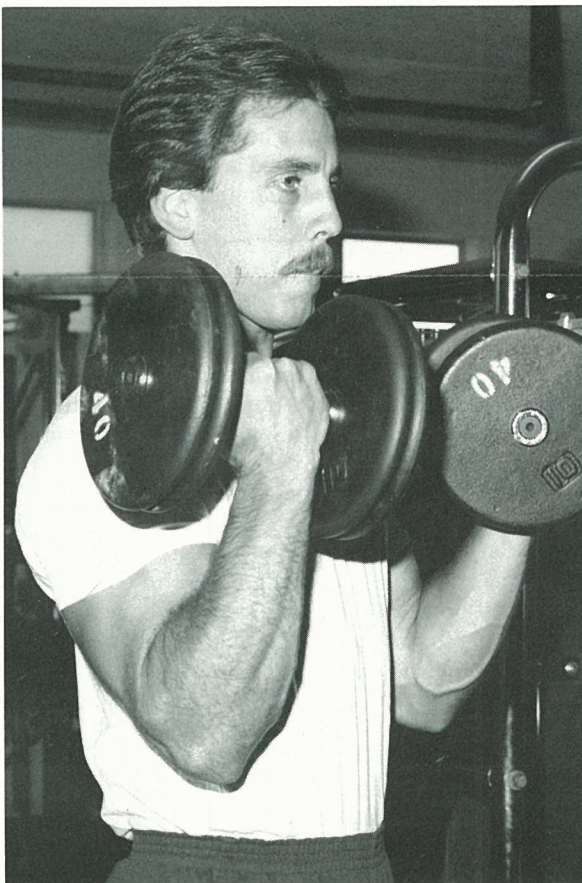
Corbett can usually be found at the water fountain during breaks in the factory, because he also avoids coffee and soft drinks.

Corbett thinks it is important for weightlifters to balance their strength exercises with endurance exercise, such as running. "You've got to give your heart a workout along with the other muscles," he said.

Being physically fit enhances self-esteem by making people feel better and look better, without exception, Corbett said. He believes that weightlifting is beneficial to both men and women and has advised people of both sexes on how to use it to achieve either gains or losses in body weight.

Corbett recently served as head judge in a power-lifting contest at Fort Worth's employee recreation center.

The Fort Worth native and six-year General Dynamics employee and his wife, Mildred, are also avid bicycle riders. "We sometimes use stationary cycles and rowing machines," he said. "Any type of exercise is good, as long as you do it regularly."



James Corbett Pumping Iron

Submarine Is Named San Juan to Honor Puerto Rican City

The SSN 751, a 688-class fast-attack submarine under construction at Electric Boat, has been assigned the name *San Juan* by the U.S. Navy.

San Juan, which honors the city in Puerto Rico, is the first submarine and the third U.S. Navy ship to bear the name.

The first *San Juan* was a 118-foot commercial vessel converted for use as a minesweeper and patrol boat. Commissioned in March 1918, she served until February 1919, when she was no longer needed in the fleet. She was decommissioned and returned to her owner.

The second *San Juan*, a light cruiser, joined the fleet in February 1942 and spent the remainder of World War II in the Pacific in actions that ranged from landings at Guadalcanal in August 1942 to screening fast carrier task forces in raids on the Japanese home islands in August 1945. Her exploits earned the ship 13 battle stars.

After the war, *San Juan* took part in the liberation of American prisoners in Japan. Decommissioned in November 1946, she was sold for scrap in October 1961.

Space Systems Division Opens Support Office In Albuquerque, N.M.

The Space Systems Division has formally opened a local program office to provide technical and administrative support for its activities in the Albuquerque, N.M., area.

W. F. Rector III, Division Vice President for Program Development, said that Harold A. Shelton has been named manager of the office, which will support various customer organizations in the area.

"General Dynamics has a long association with organizations such as Kirtland AFB, the Los Alamos and Sandia National laboratories, as well as various units at the White Sands Missile Range," Rector said. "Activation of this office will provide the necessary technical presence to strengthen these relationships."

Shelton joined General Dynamics from Plasmatronics, Inc., a research and development company in Albuquerque engaged in laser development and other plasma physics applications. Prior to that he had extensive experience with the U.S. Air Force in aircraft maintenance, flight test, operations and laser and space-related research and development.

The General Dynamics Space Systems Division produces the Atlas and Atlas/Centaur launch vehicles. In addition, the division is developing advanced concepts for next-generation space transportation systems, spacecraft and a number of other advanced space technology programs.

Japan and Greece to Receive Phalanx Systems

The U.S. Navy has notified Congress of a proposed Letter of Offer to Japan and Greece for the purchase of Pomona's Phalanx close-in shipboard gun system.

The Navy will have the responsibility for all transactions related to both sales.

The estimated cost of the sale to Japan of six systems, plus spare parts and engineering support, is \$70 million. The estimated cost of the sale to Greece of two systems, plus spare parts, ancillary equipment and engineering

support, is \$26 million.

Both countries intend to install Phalanx aboard combat surface ships to improve their air defense capability.

Phalanx has been in production at Pomona since 1979 and is effective against close-in air and surface threats which penetrate outer defenses. Deliveries since 1979 total more than 400 systems.

The Phalanx system was developed by Pomona under contract to the Naval Sea Systems Command.

Land Systems Employee Cited for E-QIP Training Efforts

A Research and Engineering employee at Land Systems has received the M1 Program Office's Options in Management award.

Joseph Yost, Manager of RAM-D, HFE/Safety, received the award for his efforts in developing and managing the training for the Engineering Quality Improvement Program (E-QIP).

"The success of the M1 Program Office, and indeed of

Land Systems, relates directly to high engineering quality," said James J. Ruma, Engineering Program Manager for M1 Product Assurance. "E-QIP translates into favorable impact on schedule and budget, and that means money in the bank for all of us."

E-QIP is a corporatewide effort to stress the essentials of building quality into products.

Land Systems Team Discovers There Was More Than Gold at Fort Knox

A contingent of Land Systems employees found out recently that there was more than gold at Fort Knox, Ky.; there were athletic competitions, colorful team uniforms and a lot of old-fashioned fun.

The employees helped conduct the Second Annual Golden Field Day, which provided athletic contests for handicapped children in the Fort Knox area. It was sponsored by the U.S. Army and supported by soldiers, civilians and private companies.

More than 25,000 persons attended the daylong event.

An \$1,800 contribution from Land Systems, the event's largest single contribution, provided uniforms for 23 athletes from the Louisville Cerebral Palsy School, transportation for the medals, food for concession stands, supplies and autograph books for the athletes.

Four Land Systems employees stationed at Fort Knox supervised the Land Systems effort. They are: Charles F. (Skip) Booher, Corporate Manager of the Fort Knox Field Office; Mary E. Johnson, Corporate Field Office Assistant; William L. Fitzgerald, M1 Field Office Site Supervisor, and Cindy Riggs, M1 Field Office Assistant. They were assisted by Johnson's husband, Randy.

Eight other Land Systems employees flew to Fort Knox from the Detroit area to assist in myriad last-minute details and to provide moral support for the athletes. They were: Theodore A. Beaupre, a photographer in Publications; Frank L. (Lynn) Marangon, Director of Program Development, and his wife, Marny; Delores J. Pieczontka, a secretary in International Marketing; Elaine M. Roach, a secretary in Atmospheric Defense Initiative; Nancy S. Safar, a secretary in Domestic Marketing; Mary J. Solowski, Executive Secretary to the Vice President of Marketing, and Gwen Watson, Chief of Marketing Administration, who organized and coordinated the Detroit-area participation.

The festivities began with the launch of five colorful hot-air balloons over Godman Army Airfield, a performance by a team of skydivers who glided over the crowd and a parade of athletes and VIPs, including the grand marshal, Col. Woody Spring, U.S. Army Astronaut. Entertainment included magic shows, a horse show, square dancing, baton twirling, a drill team and acrobatic demonstrations.

More than 700 contestants, clad in bright yellow uni-



Having a Field Day. Four persons from a group representing Land Systems Division shared their pleasure with participants in the Second Annual Golden Field Day at Fort Knox, Ky. Shown are (left to right in dark T-shirts): Randy Johnson (holding hat with hand), Mary Solowski (holding paper cup), Gwen Watson (waving) and Mary Johnson (sitting). General Dynamics also made a financial contribution for the event.

forms, spent the day making new friends, signing autographs and competing in the 50-meter dash, long jump, 200-meter run, Frisbee accuracy throw, softball and tennis throws, wheelchair races and a bean-bag toss.

Land Systems also participated in the first Golden Field Day last year. Booher credits Johnson with the GDLS

participation. "It was her idea to begin with," he said, "and she was the driving force that got the company and all of us to take part."

Booher said that all the Land Systems helpers reported an emotionally gratifying and rewarding experience. "They all want to go back next year," he said.

Data Systems Division Employee Finds Excitement as Sheriff's Volunteer

Working as a volunteer member of the San Diego County Sheriff's Search and Rescue Division has a lot of advantages for Kathleen Tucker. It not only combines her love of the outdoors with her desire to help others, but it also brings her excitement and adventure.

Tucker, a senior programmer analyst at Data Systems Division-Western Center, and other volunteer members of the sheriff's division work alongside regular sheriff's deputies to help in rescues and searches or to help apprehend lawbreakers. Other law enforcement agencies also call upon the services of the search and rescue division.

Tucker is a member of the search and rescue division's tracking team. Other units are made up of rangers on horseback, field communications specialists or motorized law enforcement teams.

The outdoor activity with the sheriff's unit seems to be a natural for Tucker, who enjoys horseback riding, camping and four-wheeling in the desert.

To qualify as a recruit, she had to pass both an oral and written exam and an FBI background check. The next step was to attend the sheriff's academy, a rigorous training that took her six months to complete.

Tucker was sworn in on Feb. 20, 1985. Since then, she has participated in rescues, homicide investigations, a kidnapping investigation, fire disasters and crowd control. She can talk about most of the operations but cannot comment about others because of current litigation.

She said her most frightening experience was guarding a field of marijuana. "Shots had been heard near a residential area," she said. "A homicide had occurred, and we were called in because it was mountainous terrain. We had

to guard the field in case someone came back during the night. The field was booby-trapped, so just getting in there was difficult. It was a long night — 11 hours of knowing someone might be out there after you."

She also recalls her first rescue. A woman and her 18-month-old baby were lost in the Cuyamaca Mountains east of San Diego. Tucker's team was called to the search.

"It was a real life-and-death situation," Tucker said. "They had been lost for six hours, and the temperature had dropped to 36 degrees. We had to track them in leaves four inches thick in the dark with flashlights."

Several hours later, a second search team heard the woman calling. The two teams eventually closed together, and the rescue was complete.

"It was a great feeling," Tucker said.

Another search was not as successful. Again, a child was lost in the mountains, but the weather was much colder and snow had fallen. The child was not found.

Even when the search is not successful, Tucker believes it is worthwhile. "You do it for the families," she said. "If I were lost in the wilderness, my family would want someone to care enough to look for me."

Tucker and her fellow deputies perform their duties entirely on a volunteer basis. They drive their own vehicles to the rescue and training activities and purchase their own uniforms and weapons. Tucker carries a .357 Magnum pistol on duty and must requalify every three months to retain her badge.

Last year, 111 search and rescue volunteers in the unit contributed nearly 40,000 hours of their time and almost 300,000 miles of travel in a wide variety of assignments.



Sheriff's Volunteer Kathleen Tucker

Mission-Capable Rate of F-16C/D Fleet Reaches Its Highest Mark

The U.S. Air Force recently announced that its F-16C/D Fighting Falcons had a mission-capable rate of 92.3 percent in April, the latest month for which figures have been compiled. The April percentage was the highest ever recorded for the F-16 fleet.

Mission capability is the statistical measure of how much time an aircraft is ready to perform its wartime mission.

In achieving the record, the F-16C/D fleet flew 2,751

sorties for a utilization rate of 19.9, while the planned utilization rate was only 16.8. The utilization rate is the average number of sorties flown by each aircraft.

The 363rd Tactical Fighter Wing at Shaw AFB, S.C., led all F-16C/D fighter wings in mission capability, with 95.2 percent for the month, while flying 1,775 sorties.

Maj. Gen. Ronald W. Yates, F-16 System Program Office Director at Wright-Patterson AFB, Ohio, said the

high performance of the F-16C/D fleet resulted from innovation and cooperation among Air Force field personnel, the F-16 System Program Office, the Air Force's Ogden Air Logistics Center at Ogden, Utah, and General Dynamics.

The F-16C/D, which Fort Worth began delivering to the Air Force two years ago, embodies design improvements that increase reliability, the Air Force said.

Employees Utilizing Contacts in Company's Ethics Program

Since the establishment of ethics hotlines as part of the company's Ethics Program last December, Ethics Program Directors throughout the company have received 834 telephone calls, letters or visits requesting information or advice regarding the General Dynamics Standards of Business Ethics and Conduct.

"The majority of these requests are made to find out how a standard applies to a particular situation," Kent Druyvesteyn, Corporate Ethics Program Director, reported.

In addition to the requests for information, 352 calls, letters or visits expressed concern about potential ethical problems or about alleged violations.

"Each of these concerns has been investigated or is still under investigation," said Druyvesteyn.

"The aim of each investigation is to establish all the facts of a given situation and to get a complete picture. In almost all instances, these fact-finding efforts clear up the matter," Druyvesteyn said.

"However," he added, "occasionally fact-finding establishes that a violation has occurred and a sanction must be imposed."

During the six months the hotlines have been operative, violations of standards have resulted in five warnings, seven temporary suspensions and nine discharges throughout the company, Druyvesteyn said.

As of July 1, 1986, the company had appointed 40 Ethics Program Directors, 29 of whom operate hotlines.

"The directors and the hotlines are a key communication link in the company's drive to integrate the Standards into all aspects of General Dynamics' performance," Druyvesteyn said.

The General Dynamics Ethics Program is built on the concept of continuous two-way communication.

To achieve and maintain two-way communication, Druyvesteyn suggests that the following fundamental points of awareness, knowledge and commitment be consistently reinforced:

- who is my Ethics Program Director?
- how can the director help me?
- what is his telephone/hotline number?
- how does the hotline work?
- where is his office?

(See related box on Page 2)

Employee Survey Participation Urged

Fellow Employees:

In a few weeks, all of us will be participating in our first Corporatwide survey. I believe that this is very important to you and the Company. I urge each of you to participate and to feel free to give us your candid opinions on the matters being surveyed.

The firm of Sirota & Alper has been employed to assist us in this survey. They are to assure that the data will be collected and handled confidentially, and they are to provide a clear and objective analysis of the results.

I want to reaffirm to all of you that when the results of the survey are received, they will be published and made available to everyone. More important, communications, action plans and follow-through will be initiated in areas that are clearly shown to be of great concern to you and other employees.

St. Pace

Chairman of the Board and
Chief Executive Officer

GENERAL DYNAMICS

World

Volume 16 Number 8

August 1986

Chairman Pace Says Recent Developments Boost Company's Aerospace, Defense Role

Chairman Stanley C. Pace, in announcing the company's results for the second quarter of 1986, reported that several significant developments have occurred that will maintain or advance the company's position as a leading supplier of defense and aerospace products.

Among the recent developments that will have a long-term positive effect on the company, Pace said, were the following:

- General Dynamics entered into a teaming agreement with The Boeing Company and Lockheed Corporation to compete for development of the Advanced Tactical Fighter for the U.S. Air Force. If successful, the three companies will share in the design, manufacture, test and support of this high priority program, for which full-scale development is scheduled to begin in 1990.

- The U.S. Air Force took delivery of its 1,000th F-16 fighter aircraft on July 8th at Fort Worth. Worldwide, 1,572 Fighting Falcons have now been delivered to 10 countries, and current plans call for the acquisition of more than 4,300 F-16s by 15 nations.

- Electric Boat launched the attack submarine *Helena*, the 22nd SSN 688-class ship built by the division, which has a backlog of 11 attack and six Trident submarines.

- Two milestones in Convair's Sea Launched Cruise Missile Program demonstrated the potential for enhancement of the broad mission capability of cruise missiles. One Tomahawk, launched from a truck-mounted launcher, flew more than 300 miles to engage multiple targets in a test of conventional submunitions land-attack capability. Another Tomahawk, launched for the first time from a U.S. Navy ship on regular deployment, successfully completed a simulated land-attack mission against a target 500 miles away.

On July 23rd Pace reported that General Dynamics' earnings from continuing operations for the second quarter of 1986 were \$103.5 million, or \$2.43 per share, up 6 percent over earnings of \$97.9 million, or \$2.31 per share, for the second quarter of 1985.

(Continued on Page 7)



Impressive One-Day Performance. Material Service Corporation recently completed the largest pour of concrete — 4,520 cubic yards — to a single customer in one day in its history. The concrete was poured as part of the base foundation of a major construction project in Oak Brook, Ill. The ready-mix was delivered to the site by 95 Material Service trucks from three company yards in the Chicago area in a 10 1/2-hour workday, with concrete poured at an average of seven yards a minute. About 135 Material Service employees, including truck drivers, dispatchers, plan operators, loader operators and even plant managers who directed truck traffic at the site, were involved in the effort. In the photo at left, ready-mix from two trucks is poured into one of the hoppers used on the job. In the photo at right, a hopper has been moved by a giant crane to a spot where its contents are to be poured. The project, which began last January, will be the world headquarters of a large fast-food firm and will consist of a three-story 500,000-square-foot office building with three parking levels underground. By the time the general contractor, Gerhardt F. Meyne Co. of Chicago, completes the project in early 1988, Material Service will have delivered and poured a total of 75,000 cubic yards of ready-mix for the base foundation and the columns, beams and slabs in the building's frame.



Spaceweek Visit. Apollo Astronaut Alan Bean (left) meets with Lee Scherer, Space Systems' Director-Commercial Space Programs, during Spaceweek activities.

Astronaut Alan Bean Uses His Paintings In Space Presentation

Apollo Astronaut Alan Bean, now an artist, is using his talent to portray his experiences in space.

When the Reuben H. Fleet Space Theater and Science Center in San Diego, Calif., celebrated National Spaceweek in July, the General Dynamics Space Systems Division took the opportunity to sponsor an appearance by Bean to illustrate his art.

Using slides of his own paintings projected against the huge screen of the space theater, Bean entertained the audience with stories about his experiences in space that only a few persons ever know.

As lunar module pilot on Apollo XII, the second lunar voyage, Bean became the fourth man to set foot on the moon. Later, he spent 59 days in space as commander of Skylab II. Now as an artist, he creates paintings based on his space experiences, as well as those of his colleagues in the astronaut corps, that artistically record what those first moon explorations were like.

In support of Spaceweek, a group of engineers from Space Systems participated in the series of lectures and panel discussions during the five days of events.

Reuben H. Fleet, who made possible the building of the Space Theater in San Diego, was the founder of Consolidated Aircraft, one of the predecessor companies of General Dynamics.

Savings and Stock Investment Plans				
	Annual Rate of Return for the 12 Month Period Ending:			
	May 1984	May 1985	May 1986	
Salaried				
Government Bonds	5.8%	15.9%	12.7%	
Diversified Portfolio	(10.4)%	40.8%	38.8%	
Fixed Income	12.2%	12.4%	12.2%	
Hourly				
Government Bonds	5.8%	16.0%	12.1%	
Diversified Portfolio	(12.9)%	40.4%	39.4%	
Fixed Income*	N/A	N/A	12.2%	
GD Stock Closing Price	\$45.00	\$71.75	\$79.25	
* Fixed Income effective 6/30/85				

GENERAL DYNAMICS

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General Dynamics Ethics Program Directors			
Division/Subsidiary	City Location	Ethics Program Director	Phone Number
			(* = Hotline)
Nationwide	St. Louis	Kent Druyvesteyn	800-433-8442*
Cessna	Wichita	Donald E. Powell	316-946-7880*
Convair	San Diego	John C. Barrons	619-573-8120*
Corporate Office	St. Louis	Michael C. Lucero	314-889-8456*
	Washington	Leland B. Bishop II	703-553-1343*
DatagraphiX	San Diego	Edgar L. Campbell	619-283-3760*
Data Systems	St. Louis	William E. Tucker	314-851-8906*
	Camden	Alan E. Novak	501-574-4202
	Fort Worth	Robert B. Gardner	817-737-1682*
	Newport	Joe P. Maciejowski	401-841-6907
	Norwich	James M. Cleary	203-823-2700*
	Pomona	Walter W. Gustafson	714-868-4661
	San Diego	Roger E. Barnes	619-547-4682*
	Warren	Frank T. Sossi	313-978-4284
Electric Boat	Groton	William A. Miller	203-441-8000*
	Avenel	Robert A. Wylie	201-636-0155*
	Quonset Point	Roland J. Plante	401-268-2705*
Electronics	San Diego	M. Ray Reynante	619-573-7384*
Fort Worth	Fort Worth	Jerry A. Sills	817-777-1400*
	Abilene	Jon A. Cohen	915-691-2131*
Freeman United Coal	Chicago	James T. Ryan	312-263-3933*
GD Services	St. Louis	Lewis A. Corwin	314-851-8997*
Land Systems	Troy	Charles J. Stieber	313-583-5888*
	Detroit	Robert J. Baker	313-573-1089
	Center Line	James R. Carson	313-497-7005
	850 Building	Charles H. Stout	313-583-5430
	Sterling Plant	Walter E. Lowe	313-978-4057
	Warren Logistics	John J. McCuen, Sr.	313-978-5550
	Lima	Walter W. Opanowicz	419-226-4540*
	Scranton	Robert E. Dine	717-876-5797*
Marblehead Lime/ Material Service	Chicago	Edward K. Wilverding	312-263-3931*
Pomona	Pomona	Roy E. Harris	714-868-2001*
	Camden	Ted C. Bernard	501-574-4446*
	Navajo	James Monroe	602-729-6539*
Quincy	Quincy	Carter W. Eltzroth, Jr.	617-773-6630*
	AMSEA	James F. O'Hearn	617-786-8300 ext. 702
Space Systems	San Diego	Richard L. Neal	619-573-8367*
	E. Test Range	Jeff Hartnet	305-853-5624
	W. Test Range	Norvell Freeman	805-865-8072*
Valley Systems	Rancho Cucamonga	Donald D. Skinner	714-945-7772*



Indonesian Air Show. B. J. Habibie, Indonesian Minister of Research and Technology, points toward F-16A model on display at Indonesia Air Show '86 in Jakarta as that country's President Suharto looks on. Standing beside Suharto, partially obscured by security guard in foreground, is Joseph K. Jopling, Fort Worth's Director-International Marketing. The U.S. Government has approved the sale of up to 12 F-16A/B aircraft to Indonesia, which is considering the letter of offer as well as a competing French proposal.

Electric Boat Facilities Cited for Blood Donations

The Groton, Conn., and Quonset Point, R.I., facilities of Electric Boat received awards recently for their participation in blood donor programs.

Groton received an Honorable Mention Certificate from the American Red Cross' Southeastern Connecticut Chapter. The award noted that 5,817 pints of blood were donated by employees during 1985.

Quonset Point received its award from the Rhode Island Blood Center for the facility's "outstanding donor program and support of volunteer blood donor activities" for the center during 1985. Some 2,285 employees gave blood during the year.

Company's Maritime Subsidiary in Operation With Quincy-Built Ships

With the recent delivery of the *Sgt. William R. Button*, the American Overseas Marine Corporation (AMSEA), a new General Dynamics subsidiary, is now fulfilling its charter to operate all five Maritime Prepositioning Ships built by Quincy Shipbuilding.

With its own facility in Quincy, Mass., AMSEA has a shore-based staff of 40, which provides engineering, operational, financial and administrative support to each of the ships.

The shore-based personnel have been drawn from the top ranks of the world shipping community and "bring with them a wealth of experience in the safe and economical operation of ships similar to the Maritime Prepositioning Ships," according to Capt. B. J. (Bill) Fennick, President of AMSEA.

Captain Fennick, a former Executive Vice President with Moore McCormack Lines, is in charge of the operations of the shoreside staff as well as the 225 officers and crew members of the five 671-foot-long ships.

In addition to the *Button*, which was delivered on May 22nd, AMSEA operates the *2nd Lt. John P. Bobo*, *Pfc. Dewayne T. Williams*, *1st Lt. Baldomero Lopez* and *1st Lt. Jack Lummus*.

AMSEA was established to operate the five ships under long-term charter to the Military Sealift Command. The operating agreements provide for a firm five years of operation, with options for another 20 years, effectively providing a backlog of 25 years of operation.

Each ship has a 30-man crew working with Navy and Marine Corps personnel. AMSEA has completed the staffing of the ships, and the training of the last crew has been completed. Two of the ships, the *Bobo* and the *Williams*, have participated in a number of military exercises in the East Atlantic.

Each MPS ship is a mobile, prepositioned depot for Marine Corps equipment and carries material and supplies to outfit and sustain more than 3,000 Marines — approxi-



The *Sgt. William R. Button* Sails Past the Statue of Liberty

mately one-fourth of a Marine Amphibious Brigade — for 30 days.

The ships have been designed to off-load vehicles, supplies, fuel and water either at pier side or at anchor off shore. In addition, each ship can pump liquid cargo ashore from a distance of up to two miles.

The 22,700-ton ships have a cruising range of 12,000 nautical miles at more than 18 knots. They will provide support for the U.S. Rapid Deployment Force and will be stationed, fully loaded, at forward bases in regions of potential crisis.

Cyclist Rob D'Entremont Finds Two Wheels Are Better Than Four in Fort Worth Traffic

Some people might not understand why Fort Worth employee Rob D'Entremont rides a bicycle 250 to 300 miles a week in Texas' summer heat and winter cold.

He sums up his motive with one word: efficiency.

"Cycling appeals to me because I receive so many benefits at one time," he explained. "How many other sports can you think of that can give you exercise, leisure and transportation simultaneously?"

D'Entremont uses cycling frequently for the latter pur-

pose. He can be seen pedaling through the Fort Worth plant gates almost any morning, en route to his job as a radio frequency systems analysis engineer. Going to and from work accounts for about 20 percent of his weekly mileage.

He logs most of the other miles training for road races on back roads and country highways. D'Entremont has been rated among Texas' top amateur cyclists for the last two years.

He has participated in more than 100 races since his first in 1980. He has placed first in about 15 major races. The typical U.S. bicycle race has from 35 to 100 entrants.

"My biggest accomplishment has been qualifying for the U.S. Cycling Federation's National Championships last year and this year," he said. Only 11 cyclists from Texas can compete in the national competition, which is held in different parts of the U.S. each year. More than 120 racers vie for the 11 spots, and D'Entremont finished in the top six among Texans both times he qualified. He was also the only cyclist from the Dallas/Fort Worth area to qualify the last two years.

Competition at the Nationals is stiff, he said. D'Entremont's current goal is to place in the top 20 there. This year's races are in August in Boise, Idaho.

Bicycle road races average 60 miles long, D'Entremont said. In time trials, his best times so far have been 56:52 for 40 kilometers, averaging 26.2 mph, and 22:12 for 10 miles, averaging just over 27 mph. The highest speed he reaches in a race is usually about 45 mph, going downhill.

"Training is not always highly intensive," he said. "You have plenty of time to enjoy the scenery and fresh air and the exhilaration of exercising. At the end of a difficult race, though, I am usually on the brink of exhaustion."

D'Entremont said he is one of only a few Fort Worth employees who ride bicycles to work, and he drives his car only when it's raining. "If there is any way possible, I use my bike. I don't like to sit in traffic in my automobile."

Riding a bicycle in traffic does not bother him because he became accustomed to it while working as a bicycle messenger in Boston for two summers.

The bicycle D'Entremont uses when racing has 14 gears, or "speeds," and weighs 21 pounds. When people ask him to recommend a type of bicycle, either for casual riding or racing, he urges them to get one of the better brands, even though it might cost several times more than cheaper brands.

"If someone says the better bikes are too expensive, I ask how much they would pay for a television set or VCR. Then I ask, 'What's going to do you more good, riding a bicycle or watching TV?'" he said.



Rob D'Entremont in Full Cycling Attire



National Award. Fort Worth employee Charles M. Brown (left) displays Employer Support of the Guard and Reserve Certificate of Appreciation with Lt. Col. Kenneth E. Green of the Texas Army National Guard.

Fort Worth Employee Honored for Support Of Guard, Reserve

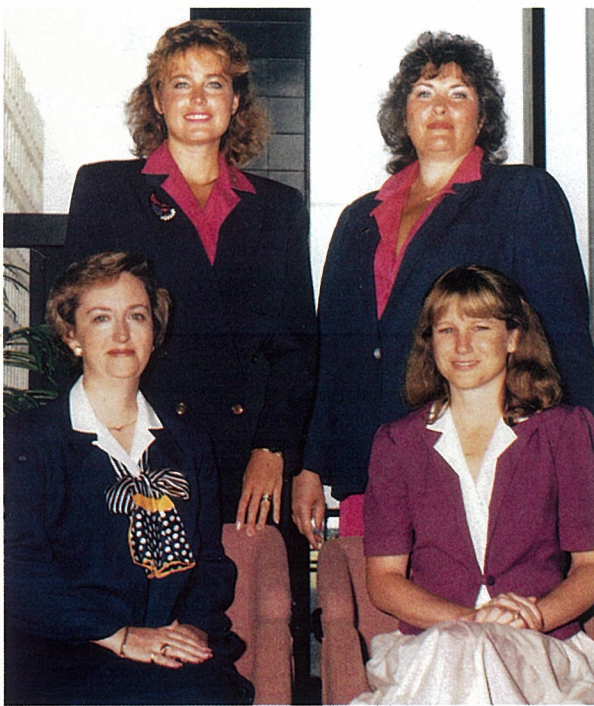
The National Committee for Employer Support of the Guard and Reserve recently honored Charles M. Brown, Quality Assurance Chief in Fort Worth's Quality Systems/Action Center, for providing outstanding support to employees under his supervision who serve in National Guard and Armed Forces Reserve units.

Brown is the first individual supervisor to receive a Certificate of Appreciation from the organization. Fort Worth is one of several companies that have previously received Employer Support awards.

Brown was nominated to receive the award by Charles Fiedler, an employee in his area who serves as a staff sergeant in the Texas Army National Guard. The award was presented by Lt. Col. Kenneth E. Green, Commanding Officer of Fiedler's unit, the 4th Battalion, 112th Armor, 49th Armored Division.

Maj. Gen. Jim McGoodwin, Commander of the 49th Armored Division and Manager of Facilities Engineering at Fort Worth, was also present, as were Maj. Ronald K. Albert, 1st Sgt. Wilmer L. Dilbeck and Sgt. 1st Class Karl W. Zabel, all of Fiedler's unit.

Brown has been with General Dynamics 39 years, is a U.S. Marine Corps veteran and formerly served with a Marine Reserve Air Detachment unit. One of his early assignments with the company was with flight acceptance crews on B-36 and RB-36 test flights.



Award Winners. Honored by the San Diego County YWCA were: Melissa Richardson, Electronics (standing, left); Nancy Kimerly, Space Systems (standing, right); Anne Rowe, Convair (seated, left), and Mary Jo Morris, Data Systems Division-Western Center (seated, right).

Employees Honored In YWCA's Tribute To Women in Industry

Four General Dynamics women have been honored for outstanding contributions to their professions by the San Diego County YWCA. Recipients of the organization's Tribute to Women and Industry (TWIN) award are Anne C. Rowe of Convair, Nancy C. Kimerly of Space Systems, Mary Jo Morris of Data Systems Division-Western Center and Melissa M. Richardson of Electronics.

Rowe, a project coordinator for Convair's Advanced Programs, has made major contributions to the program as principal estimator during early proposal phases and as program office representative on major negotiations. She continues to provide leadership on important new business proposals.

As Manager of Professional Staffing of Space Systems, Kimerly was responsible for setting up the recruiting and hiring of all executive, management and professional personnel after the division split from Convair in 1985.

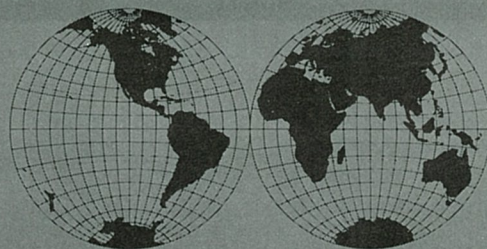
Morris, Manager of Quality Assurance, has successfully developed and implemented quality assurance programs for a full range of products and services for the Data Systems Division-Western Center.

Richardson, an engineering section head, directs design and analysis of automatic test equipment for the F-16 and B-1B aircraft. She is the first female section head at the Electronics Division.

General Dynamics gave financial support to the TWIN program and sponsored the honoree reception. Carole Black, Chief of Engineering Business Administration at Convair and a 1983 TWIN award winner, served as the presiding officer for the program.



Corporate Contribution. George P. Psihas, Vice President and General Manager of the General Dynamics Services Company (right), presents a \$5,000 check to Boys Hope in St. Louis. Receiving the contribution from General Dynamics are Boys Hope Chairman David O. Danis (left) and Paul A. Brockland, Boys Hope Executive Director (center). Psihas is the corporation's representative to the Board of Directors of Boys Hope, which operates an educational program and 11 homes nationally for disadvantaged youth.



Around the World

CHQ: Donald W. Putnam was appointed to Corporate Director-Contracts . . . Dean A. Burdon joined as Auditor-in-Charge . . . Jackson L. Munsey transferred from Land Systems and was promoted to Corporate Marketing Manager-Pakistan . . . Mary R. Brann was promoted to Administrative Support Specialist . . . Thomas A. Brown to Internal Audit Manager-New England Office . . . Sue L. Shike to Corporate Manager-Human Resources Plans & Analysis . . . Tina D. Powell to Corporate Headquarters Administrative Support Supervisor . . . William A. Houtz to Corporate Marketing Manager-Europe (Brussels).

Fort Worth: Kenneth M. Alford was promoted to Tool Design Chief . . . John L. Bean III, Bedford E. Beaty and Gwendolyn D. Boyd to Project Manager . . . Charles Bensinger, Pleasant F. Carrier Jr., Jimmie W. Cogburn, Gilbert J. Dempsey, Fred E. Denke, Eddie Duncan, Jerry Fetter, John H. Fruit, Martin P. King, Robert W. Morris, Robert A. Neff, Herschel E. Quarles Jr., Melvin C. Stanley, Cecil E. Stockton and Kenneth C. Waugh to Engineering Chief . . . David L. Boyd, Sammy L. Dunavant, Michael W. McKown, John McLaughlin Jr. and Jeffrey C. Petersen to Senior Program Analyst . . . Larry W. Brown and Patricia A. King to Senior Quality Assurance Field Engineer . . . James A. Byars to Program Specialist . . . Jimmie A. Carlisle, Charles F. Crabtree Jr., Glen H. Lemon, Arthur H. Lusty Jr. and John H. Watson to Engineering Program Manager . . . Gilbert L. Danielson to Administrative Services Specialist . . . William T. Debnam to Quality Control Field Engineer . . . Kenneth L. Fairchild, Melwyn T. Holloway and Charles A. White to Foreman . . . Gary W. Garner to Manufacturing Control General Supervisor . . . Kenneth M. Gibson to General Foreman . . . Grant L. Grumbine and Richard O. Roberts to Engineering Manager . . . Kenneth A. Hayes and Robert H. Steele to Field Service Engineer . . . H. Wayne Hollingsworth to Human Resources Chief . . . Richard F. Horvath to Finance Chief . . . Everett D. Hudson to Finance Manager . . . Robert E. Hudson to Quality Assurance Engineering Specialist . . . Myron P. Hughes to Quality Assurance Manager . . . John A. Hummel to Project Coordinator . . . Thomas D. Lowry to Senior Manufacturing Engineering Specialist . . . Michael D. Malone and Henry F. Reeves to Tooling Supervisor . . . Donald Martin to Subcontract Management Coordinator . . . Robert S. McDonald, Gary G. Phipps and Byron L. Poston to Engineering Administrative Group Supervisor . . . Larry J. McQuien to Assistant Project Engineer . . . Mike W. Miller and Timothy R. Neal to Manufacturing Control Supervisor . . . Charles E. Moore to Employee Services Manager . . . Gerald C. Murff to Chief Project Engineer . . . Donald C. Nelson to Project Engineer . . . Larry W. Pike to Manager of Production Management . . . James W. Potts to Technical Group Supervisor . . . Wilford L. Richeson Jr. to Manufacturing Engineering Chief . . . John W. Rogers to Calibration Supervisor . . . Robert A. Wright to Industrial Engineering Supervisor.

Valley Systems: Virginia Fierro was promoted to Manufacturing Supervisor . . . Gary L. Letterman to Project Engineer . . . Dale L. Gillman to Manufacturing Test Engineer . . . Eugene V. Gallina to Test Engineer . . . Steven C. Riggs to Project Representative.

Pomona: Albert C. Rodriguez was promoted to Design Specialist . . . Betty Smith to Senior Engineer . . . Allen A. Bridgewater to Material Control Supervisor . . . George F. Carroll and Arthur R. Logan to Senior Manufacturing Engineer . . . Dane M. Collins to Research Engineer . . . John M. Cuthbertson to Section Head . . . Linda S. Fehn to Senior Human Resources Representative . . . Wanda R. Kling to Administrative Accountant . . . Dennis W. Kuklovsky to International New Business Development Manager . . . Keith A. Stewart to Quality Assurance Project Engineer . . . Robert W. Wheeler to Program Manager . . . Theodore E. Adelman to Project Administrator . . . Robert W. Coburn to Project Engineer . . . Linda P. Doucette to Quality Assurance Manager-Navajo Facility . . . Erma J. Malone to Project Representative . . . Richard A. Paquette to Project Engineer . . . Dean V. Stoa to Manufacturing Supervisor . . . Richard W. Waddington to Engineering Manager. At Camden, Charles E. Elliott to Material Liaison Representative . . . Peter V. Holland to Quality Assurance Chief . . . Melvin J. Anderson to Quality Director . . . Frank L. Mahan to Management Development/Training Manager.

Electric Boat: Merle Smith was promoted to Assistant Division Counsel . . . Clifford Fisher to Engineering Services Chief . . . Stanley Gwudz, Mark McDonald and Robert Wood to General Foreman . . . Edward Brouillard, Michael Cahoon, Paul Hann, Elmer Jensen, John Keating, Juan Rivera, Andrew Ross, John Roszelle, Chester Sowalski and Nancy Warburton to Foreman . . . Richard Caulfield to Radiological Control Foreman . . . Jane Brown to Administrative/Control Supervisor . . . Paul Duggan to Ship Safety Officer . . . Michael Gualandi to Facility Area Manager . . . Harry Holmgren and Frank Ricci to Engineering Supervisor . . . Michael Matigian to Nuclear Test Supervisor. At Quonset Point, Arthur Serpa and Roland Morin to General Foreman . . . Richard Ansaldi to Senior Packaging Administrator . . . Patricia Trudeau to Foreman . . . Austin Payne to Group Trade Planner.

Land Systems: Charles E. Miller Jr. was appointed to Plant Material Operations Director . . . John G. Pappageorge to Business Planning Director . . . Bradley L. Waldrep to Quality Assurance Director . . . David M. Moen was promoted to Manufacturing Technology Group Leader . . . James P. O'Brien to General Foreman . . . Joseph J. Borys to Scranton Production Control Manager . . . Chaman L. Bhan to Group Engineer . . . Joseph R. Martin to Human Resources Specialist . . . William J. Sliwinski and Alfred L. Werner to Quality Assurance Engineering Specialist . . . Michael B. Peri to Senior Program Management Representative . . . Henry J. Williams to Engineering Services Chief . . . Francis A. Lunsford, John Giganti and Stephen P. Czerniak to Program Engineering Management Chief . . . Benjamin T. Danna to Buyer Specialist . . . Michael R. Clancy to Material Programs Manager . . . Lynn M. Johnson to Inspection Foreman . . . Robert J. Rannebarger to Audio Visual Specialist . . . Thomas F. Dishart to ILS Field Operations Supervisor . . . Ed A. Dupere to Design Supervisor . . . Dennis A. Bielawski to Engineering Manager . . . Thomas F. Ventitelli to Program Management Chief.

Convair: Norman C. Tipton was appointed to Integrated Logistics Support Director . . . Don M. Adamson, Lonnie R. Parker, Frank R. Schneider Jr. and Lee W. Stamper were promoted to Manufacturing Engineering Chief . . . Barbara Alexander to Communication Services Operations Supervisor . . . John J. Collins to Finance Chief . . . John A. Curtiel to Drafting Supervisor . . . John A. Horvath to Group Engineer . . . James G. Petrie to Operations Product Manager.

Space Systems: Darlo J. Clemens was promoted to Quality Assurance Program Manager . . . Robert E. Diehl to Estimating Chief . . . William J. Ketchum to Program Manager.

Data Systems: At Eastern Center, Walter L. McVicker was promoted to Engineering Software Supervisor . . . Gregory A. Shetler to Engineering Software Chief. At Central Center, Robert DiMaria to Senior Programmer/Analyst . . . John M. Semple to Engineering Software Chief. At Western Center, Walter F. Evans to Valley Systems Site Manager . . . Jack C. Delsman to Purchasing Agent . . . Parmjit S. Dhesi to Engineering Software Supervisor . . . Gary W. Parlet to Production Control Supervisor.

GDSC: Bernard A. Jones was promoted to Project Engineer . . . Sarah C. Koppes to Marketing Administration/Planning Manager.

Testing Begins on New F-16 Control System

An F-16 test aircraft modified to incorporate a digital flight control system instead of the Fighting Falcon's conventional analog flight controls was recently flown from Fort Worth to Edwards AFB, Calif., to begin an extensive flight evaluation program.

The aircraft, F-16D No. 3, was flown with the new flight controls for the first time at Fort Worth in mid-July. Company test pilot Joe Sweeny said the flight controls functioned well in several check flights at Fort Worth.

The flight test program at Edwards, scheduled to last seven and a half months, is a full-scale-development effort

which will lead to production incorporation of digital flight controls in U.S. Air Force F-16s beginning with production Block 40 in 1988, according to Alan Arabian, Fort Worth's program manager for the project.

Arabian said digital flight controls will improve the F-16's fly-by-wire system by making it easier to accomplish flight control computer software updates, adding greater flexibility to F-16C/D configurations. The computational power of the processors in the flight control computer will also permit F-16 capability enhancements that were impractical in the analog computer system, he said.

Swapping Jobs Gives Two Convair Employees Idea of Other's Work

Two Convair Quality Assurance employees recently found out what it was like to do someone else's job.

As a Quality Control Chief, Tom Maxwell is responsible for supervising the work of employees who do the hands-on inspection of detailed, fabricated parts. Matt McManaman, Corrective Action Group Engineer, supervises a group of engineers who resolve quality deficiencies on production hardware.

Today, thanks to a new management development program, they know what each faces day to day.

Last January, they temporarily switched jobs, gaining valuable experience as well as an insight into what the other job entailed. With the purpose of the switch attained, they recently reverted to their original jobs.

"Before, on the factory floor," said Maxwell, "I would write up a quality deficiency and send it to other functions for processing. Handling one of those functions was Matt. During the switch, I saw the other end of that process and what it takes to resolve a deficiency."

Maxwell began his career at Convair after completing a degree in Industrial Supervision at Northern Arizona University in 1981. He has spent most of his career in the production area, first with Operations and now with Quality Assurance.

"Because I'm not an engineer, it's doubtful I would have gotten the experience of working directly with an engineering group if this program hadn't provided it," said Maxwell.

McManaman graduated from Purdue University with a Bachelor of Science degree in Industrial Engineering and went to work as a corrective action engineer for Convair in 1983.

"Without this experience," he said, "I would not have had the opportunity to work with the factory workforce. Back on the corrective action side, you sometimes get lost in seeing only the wrongs that occur. When you become part of the production side, you get an appreciation for the large number of rights."

Both McManaman and Maxwell, now back at their old jobs, are enthusiastic about additional rotations in the future. Meanwhile, six more Quality Assurance people will begin job rotations as phase two gets under way in the near future.

"The program is a coordinated approach," said Rudy Molina, Division Vice President-Quality Assurance. "The employee and the department effort produces a human resource plan for the entire quality organization."

The plan not only provides career enhancements for participants but also depth of experience in key positions for the organization, Molina said.

"It opens a door of opportunity to all of our dedicated employees by preparing them for more responsible positions," said Molina.



Job Swappers Maxwell (left) and McManaman



"Rough and Ready" Remembered. Chairman Stanley C. Pace (right) and John E. McSweeney, Vice President and Convair General Manager, hold up a painting presented to Pace at a recent meeting of the San Diego National Management Association. The painting recreated Pace's B-24, "Rough and Ready," which Pace was flying when he was shot down in 1944.

Gift of Painting of His WWII B-24 Bomber Is Memorable to Chairman Pace

By Julie Andrews

The last time Captain Stanley C. Pace saw his B-24, "Rough and Ready," was in 1944 in World War II when he was shot down after a bombing raid to Germany.

About 42 years later, he got a different look at the Convair-built B-24 Liberator. He was presented with a painting of his aircraft as a remembrance of his talk to a sellout dinner meeting of the San Diego Chapter of the National Management Association (NMA).

As Pace received the painting from Vice President and Convair General Manager John E. McSweeney, he said, "This makes me feel very warm inside. Thank you."

Created by Convair's Art and Editorial department artist Roy Gjertson, the painting was a gift to Pace from the NMA chapters of Convair, Space Systems, Data Systems-Western Center and Datagraphix.

Pace, a 1943 graduate of the U.S. Military Academy, was a captain in the Army Air Forces and squadron flight leader on his 39th mission which put him in German hospitals and prison camps for nine months.

After bombing Friedrichshafen on Lake Constance, his squadron (783rd Bomb Squadron, 465th Bomb Group)

came under enemy fire. With the B-24 on fire and headed toward earth, the crew bailed out. Pace suffered burns and was treated in a German hospital outside Munich.

From there he was transferred to a stalag at Barth on the Baltic Sea, where he remained a POW until Russian forces liberated the camp on May 1, 1945.

In addition to the B-24 painting, Pace was presented with several other items. A former squadron mate provided an old 8mm film which Convair's Motion Picture and Television department dubbed onto a VHS cartridge for Pace. The film gives an authentic record of the "Rough and Ready" distinctive markings.

While researching "Rough and Ready," Convair discovered a coincidence about another B-24. The 5,000th Liberator built during the war — called "Old V Grand" — carried the signatures of hundreds of San Diego Convair workers. In 1944, it was sent to the 783rd Bomb Squadron, Pace's old unit, and might possibly have been a replacement for "Rough and Ready." Pace was given a framed photograph of "Old V Grand," as well as a B-24 model.

Space Systems Cuts Shuttle/Centaur Work Force

General Dynamics announced on July 29th that it will reduce its Space Systems Division work force in California and Florida by about 450 as a result of NASA's decision to cancel the Shuttle/Centaur program.

Bernie A. Kulchin, Space Systems Division Vice President-Human Resources, said that the layoffs involve both hourly and salaried employees and will affect more than 300 at Space Systems in San Diego and about 100 who are supporting Shuttle/Centaur testing at Cape Canaveral in Florida. The reductions will occur over the next several months coincident with the orderly phase-down of the program.

"We very much regret losing the talents and skills of these fine people," Kulchin said. "However, a program cancellation of this magnitude necessitates difficult but unavoidable decisions to reduce personnel."

He said that actions are already under way to identify job opportunities within other divisions of General Dynamics as well as other companies to assist those im-

pacted by the reduction.

In a letter to all Space Systems Division employees, Dr. Alan M. Lovelace, Division General Manager, said, "Our division is pursuing new business opportunities. When these new programs are awarded, and growth resumes, those employees affected by these reductions will receive first consideration for placement into available openings."

The division also announced that it is activating an Outplacement Center at its Kearny Mesa Plant in San Diego to provide assistance to affected employees in resume writing, job market analysis and interviewing skills. Similar assistance will be provided those affected in Florida.

Other divisions of General Dynamics will be interviewing at the Outplacement Center, and other companies throughout the United States will also be scheduled to participate in matching individual job skills to their requirements.

Fort Worth Hosts Discussion on Mutual Education/Industry Problems

Fort Worth recently hosted a panel discussion on the common interests of educational institutions and industry which was attended by more than 50 state lawmakers as part of the 1986 Southern Legislative Conference of the Council of State Governments.

Dan S. Zimmer, Fort Worth Vice President-Human Resources, was one of three panelists who discussed various issues and answered legislators' questions. Other panelists were Don Reynolds, area Vice President-Investments, E.F. Hutton, and noted futurist who has taught graduate business courses at Texas universities for several years, and Jerry Shaver, Administrator of Staffing Outreach and College Relations at the E-Systems plant in Greenville, Tex.

Dr. Fred Baus, President of the Association for Higher Education of North Texas, was panel moderator. Baus opened the discussion by asking the panelists and audience

to think of two issues: what industry needs from the educational community, and what the educational community should provide to industry.

Zimmer expressed concern that colleges and universities may have difficulty supplying the numbers of engineering graduates that will be required by industry in the future, as high technology products become increasingly complex. He also said shortages of math and science teachers that exist in some public school districts could impact industry in the future.

The major challenge of education will be to keep up with changing technologies, just as it has been for the last 10 years, Zimmer said.

Reynolds stressed that a greater need for continuing education programs can be expected as new training is required to help the work force meet changing technologies. He also called for increased emphasis on oral com-

munication and writing skills, along with technical training, in undergraduate education.

Shaver said companies should continue their efforts in encouraging employees to attain higher graduate degrees without leaving the work force. He, too, called for greater emphasis in writing and basic math instruction.

The company-hosted session was one of several activities in the Fort Worth area for Southern Legislative Conference attendees. Conference members represent the governments of 15 southern states, the District of Columbia and Puerto Rico.

In welcoming remarks at the session, Herbert F. Rogers, Vice President and Fort Worth General Manager, said future growth in America's productivity largely depends on the continued cooperation of legislative bodies, educational institutions and industry. "The academic community is fundamental to industry's progress," he said.

MSIP F-16C With Latest Improvements Is Delivered to the U.S. Air Force

Fort Worth recently marked a milestone in the F-16 Multinational Staged Improvement Program with the delivery of the first production Block 30 F-16C to the U.S. Air Force.

Block 30 is the latest configuration of the aircraft and incorporates changes, including an engine bay designed to accommodate either of the alternate F-16 engines, adhesively sealed center and aft fuselage fuel tanks and avionics hardware and software enhancements.

F-16C No. 178 is also the first production Fighting Falcon equipped with a General Electric F110 engine. The F110, an augmented turbofan in the 27,000-pound-thrust class, is an alternate F-16 power plant to the Pratt & Whitney F100 engine.

The new engine bay makes it possible to install either engine in the aircraft with minor adjustments. Beginning next year, some F-16s will be delivered with an upgraded, higher thrust version of the F100, designated the F100-PW-220. The original F100 engine is in the 25,000-pound-thrust class.

The introduction of adhesively sealed fuel tanks is a major change expected to result in substantial savings in F-16 life-cycle costs through lower tank maintenance. Adhesively sealed tanks also bring a significant weight saving and are expected to lower production costs, since adhesive sealant is less labor-intensive to apply than the conventional polysulfide sealant.

All F-16C/Ds from Block 30 on will be delivered with adhesively sealed center and aft tanks.

The Air Force is evaluating a proposal to also begin sealing F-16 lower wing skins with adhesive film, said Don Bloom, a Fort Worth structural design engineer involved with the development and test program for adhesively sealed tanks.

"The USAF is considering making the adhesive tank sealing method a requirement in the production of all its future aircraft," he said.

The avionics hardware changes introduced with Block 30 include an expanded-memory Programmable Display Generator along with an expanded-memory Data Entry



First Block 30 F-16C in the Multinational Staged Improvement Program on Its First Flight

Electronics Unit, said Charla K. Wise, Manager of F-16 Block 25/30 Programs.

This expanded memory will provide growth capabilities in later blocks of aircraft. Other hardware changes consist of wiring provisions for such future systems as the Airborne Self-Protection Jammer.

Several incremental changes in the basic Block 30 configuration will be introduced with aircraft delivered over the next three years, said Wise.

Block 30B will include new equipment associated with Advanced Medium Range Air to Air Missile (AMRAAM) capability, and Block 30C will mark the first USAF aircraft

delivered with the upgraded F100 engine.

Block 30D, late in 1987, will be the first aircraft delivered with a modular common inlet duct, which is a larger inlet designed to complement both of the new engines.

The next major change in the production configuration will occur in 1988 with Block 40, as integration of low altitude and targeting infrared for night (LANTIRN), global positioning system (GPS) and other advanced capabilities begins.

F-16C No. 178 has been assigned to the USAF's 86th Tactical Fighter Wing at Ramstein Air Base, West Germany.



More Horsepower for the Mounties. The first floatplane version of Cessna's Caravan I has been delivered to the Royal Canadian Mounted Police (RCMP). The Caravan amphibian will be used to fly "mountie" investigators to the remote areas of the Province of Quebec, which encompasses nearly 600,000 square miles. RCMP officials said some trips will be made to the northern part of Quebec, some 600 miles from the Caravan's home base in Montreal. The RCMP aircraft has eight passenger seats and is equipped with weather radar and deicing equipment. An official said the RCMP hopes to add another Caravan I by the summer of 1987 and a third in 1988.

Vermont Air National Guard Gets First F-16s

The Vermont Air National Guard's 158th Tactical Fighter Group, the "Green Mountain Boys," officially accepted its first F-16s in a ceremony last month at the unit's base at Burlington International Airport.

A three-aircraft F-16 air show preceded Vermont Gov. Madeleine Kunin's official welcome to the Fighting Falcons, which was marked with a flight line ribbon cutting to symbolize the transition from old to new. One of the unit's 1960s vintage F-4s, which the F-16s are replacing, was then taxied to a site on the base where examples of some of the unit's other former aircraft were displayed.

In the air show, Capt. Scott D. Baldwin, Vermont's first F-16 qualified pilot, and Capt. John N. Bellinger Jr. and Maj. John W. Marshall, South Carolina ANG F-16 pilots, thrilled a crowd of more than 5,000 persons with formation flying, rolls, loops and a 360-degree turn. After the performance, Captain Baldwin described the F-16 as "a joy to fly."

"We're flying the best jet in the best country in the world," he said.

The ceremony was held in conjunction with an open house at the base. Members of the 158th TFG also demonstrated F-16 weapons loading, unloading and refueling operations.

The unit is receiving 18 F-16s that were formerly based at Hill AFB, Utah.

Vandenberg AFB, Calif., Receives the Last Atlas Built as an ICBM

Vandenberg Air Force Base in California has received the last of the Atlas vehicles originally built as intercontinental ballistic missiles.

Delivered from storage at Norton AFB, Atlas 53E joined the 11 other Atlases currently being modified by the Space Systems team at the Western Test Range for use as launch vehicles.

When refurbishing activities are complete, Atlas 53E will launch a USAF weather satellite in early 1989.

The first Atlas Es rolled off the Convair assembly line in late 1960, the result of an all-out effort to field an ICBM system for the U. S. Air Force.

The Strategic Air Command decommissioned Atlas as a weapons system in 1964 and sent 141 of them into storage at Norton.

Its first role as a weapon may have ended before it began, but it came back to make many marks in the record and history books. It was chosen by NASA's Mercury program to be the booster sending John Glenn into the first U.S. manned orbit around the earth. Three other Mercury flights followed, powered by Atlas boosters.

Atlas went on to become a workhorse of the U.S. space program. In all, there have been 486 Atlas launches since June 1957, including 268 from

Vandenberg, where Space Systems provides launch services as well as refurbishing operations. So far, Space Systems personnel at Western Test Range have modified 88 of the stored Atlases.

Atlas 53E will be taken apart, cleaned and inspected thoroughly. Then it will receive all new electronics and other new systems improvements. After Atlas 53E and the other 11 Atlases currently undergoing modification have completed their space missions, only eight will remain as monuments or as museum exhibits. One of those is the Atlas that stands as a sentinel in General Dynamics Missile Park in San Diego.



Tree Grove in Israel. Two Fort Worth Vice Presidents, Charles White, left, Production, and Jim Talley, second from right, Quality Assurance, recently took part in a dedication ceremony for a tree grove near Galilee. Funds for the 1,000 rock pine seedlings planted in the grove were donated by employees of several divisions and there is a plaque citing General Dynamics' efforts. Others shown during the ceremony's prayer were Rina Segal and Jacob Bar-Mor, representatives of the Jewish National Fund.

Three Fort Worth Test Pilots Are Honored For Reaching 1,000 Flight Hours in F-16s

Three Fort Worth test pilots recently completed 1,000 flight hours in the F-16 and were awarded plaques by Herbert F. Rogers, Vice President and Fort Worth General Manager, in brief ceremonies at the division.

Honored were Phil Oestricher, Director of Flight Test; Dave Thigpen, Manager of Flight Operations, and Test Pilot Joe Bill Dryden.

Many of the division's employees who had worked at Edwards AFB, Calif., during the early 1970 prototype YF-16 days watched as Rogers jokingly told the three men:

"Now that the first thousand hours are over for each of you, I think you're finally beginning to catch on."

"Seriously, they've been great and wonderful hours for all of you and for all of us," he said.

Oestricher, whose first intentional F-16 flight was on Feb. 2, 1974 (after a brief, unplanned flight during high-speed taxi runs two weeks earlier), noted that "It took me 807 flights to do this."

"Those flights were exciting and challenging, but never scary," he said. "And that's due to the quality that went into designing and building these F-16s and to the preparation that they got on the flight line."

"This (the F-16) is the finest piece of machinery that I've ever had my hands on. Thanks for doing such good work," he said.

Thigpen, whose first YF-16 flight was on Sept. 22, 1975, said, "Our flights are a tribute to everyone who has worked with us on the program. I'm happy to have completed the first thousand . . . and am really looking forward to the next thousand."

Dryden, who was associated with much of the YF-16 and subsequent production F-16 flight testing at Edwards AFB as an Air Force pilot, first flew the YF-16 on Sept. 20, 1974. He joined the division about two and a half years ago and has a total of 8,000 hours of flight time in his log book.

He also compiled more than 1,000 hours in each of two other types of military aircraft, the F-4 and the Cessna T-37.

Oestricher, a former U.S. Marine Corps pilot, and Thigpen, who flew for the U.S. Navy, were division test pilots during the F-111 program and jointly amassed more than 1,700 flight hours in that aircraft.



F-16 Test Pilots Dave Thigpen (left), Joe Bill Dryden (center) and Phil Oestricher

Competition to Open In the Fall for 1988 Merit Scholarships

High school students who are children of General Dynamics employees and who plan on competing for a company-sponsored National Merit Scholarship for 1988 should contact their high school counselors immediately after the opening of school in September.

The 1988 Merit Scholarship Program competition opens in October with the administration of the qualifying test, the PSAT/NMSQT.

Full details are included in the 1986 PSAT/NMSQT Student Bulletin, which will be distributed to students through their schools prior to the qualifying test administration.

The scholarship program was established by General Dynamics for sons and daughters of company employees. The annual Merit Scholarship competition is conducted by the National Merit Scholarship Corporation, an independent, nonprofit organization, which handles the selection of winners and the administration of their awards.

Recent Developments Boost Company Role

(Continued from Page 1)

Earnings for the first six months were \$173.6 million, or \$4.07 per share, compared to \$181.5 million, or \$4.29 per share, in the same period a year earlier.

Sales were \$2.3 billion for the second quarter and \$4.4 billion for the first half of 1986, compared to \$2.0 billion and \$3.9 billion a year ago. Funded backlog at the end of the 1986 second quarter was \$16.7 billion and the total backlog (funded and unfunded) reached \$23.7 billion, the largest total backlog recorded in the company's history. Comparable amounts at the same time last year were \$15.3 billion and \$21.9 billion.

"Our aerospace and submarine operations continued their strong performances and showed sales and earnings gains over the comparable periods in 1985," Pace said.

Although shipments of general aviation aircraft increased in the second quarter of 1986 as compared to the first quarter, Cessna Aircraft Company incurred a net loss for the second quarter of \$12.5 million, down from the \$17.3 million loss in the first quarter. "Since the recession within the general aviation industry shows no signs of ending, we have taken steps to reduce costs at Cessna, including suspension of production of all piston aircraft through model year 1987," Pace said.

Sales and earnings for the first half of 1986 at Land Systems reflect the delayed transition into full production of the advanced M1A1 main battle tank due to design changes of the ammunition door. "Although 1986 deliveries of the M1A1 will fall below earlier projections, the technical issues have been resolved, and Land Systems is moving ahead at the same high levels of workmanship achieved in the M1 program over the past three years," Pace said.

Submarine Is Third U.S. Vessel Named In Honor of Pasadena

The SSN 752, a 688-class attack submarine under construction at Electric Boat, has been named *Pasadena*, after the city in California.

The vessel is the first submarine and the third ship to bear the name.

The first *Pasadena* was a cargo ship launched in 1918 as the *War Beacon* for Cunard Steamship Company. Commissioned into the Navy in May of that year, the 416-foot ship made several convoy runs to Europe in the final months of World War I. She was decommissioned in 1919 and was turned over to the U.S. Shipping Board.

The second *Pasadena*, a 610-foot cruiser launched in 1943, began service in 1944 in the Pacific Theater during World War II. She took part in a number of actions, including the assaults on Luzon, the Japanese home islands and Iwo Jima.

The ship, which earned five battle stars for her war service, was decommissioned in 1950 and put into the Pacific Reserve Fleet.

Company-Funded Film on Ike to Be Aired on Public Television By G. Alexander Smith

The development of Dwight David Eisenhower from a boy growing up in a poor family in a small Kansas town to a five-star general and 34th President of the United States is the subject of "Ike," a one-hour Public Broadcasting Service (PBS) Special to be broadcast in October.

Funded by a grant from General Dynamics, "Ike" stars veteran actor E. G. Marshall as Eisenhower and was taped this summer in Gettysburg, Pa., site of a major battle of the Civil War in July 1863 and also of President Eisenhower's farm.

"Ike" takes place in 1967 as Eisenhower, six years after he left the White House, is being interviewed about his life and career by a graduate college student, portrayed by actress Alice Haining.

The taping was done at Eisenhower's house and farm at Gettysburg, as well as at several famous battlefield sites.

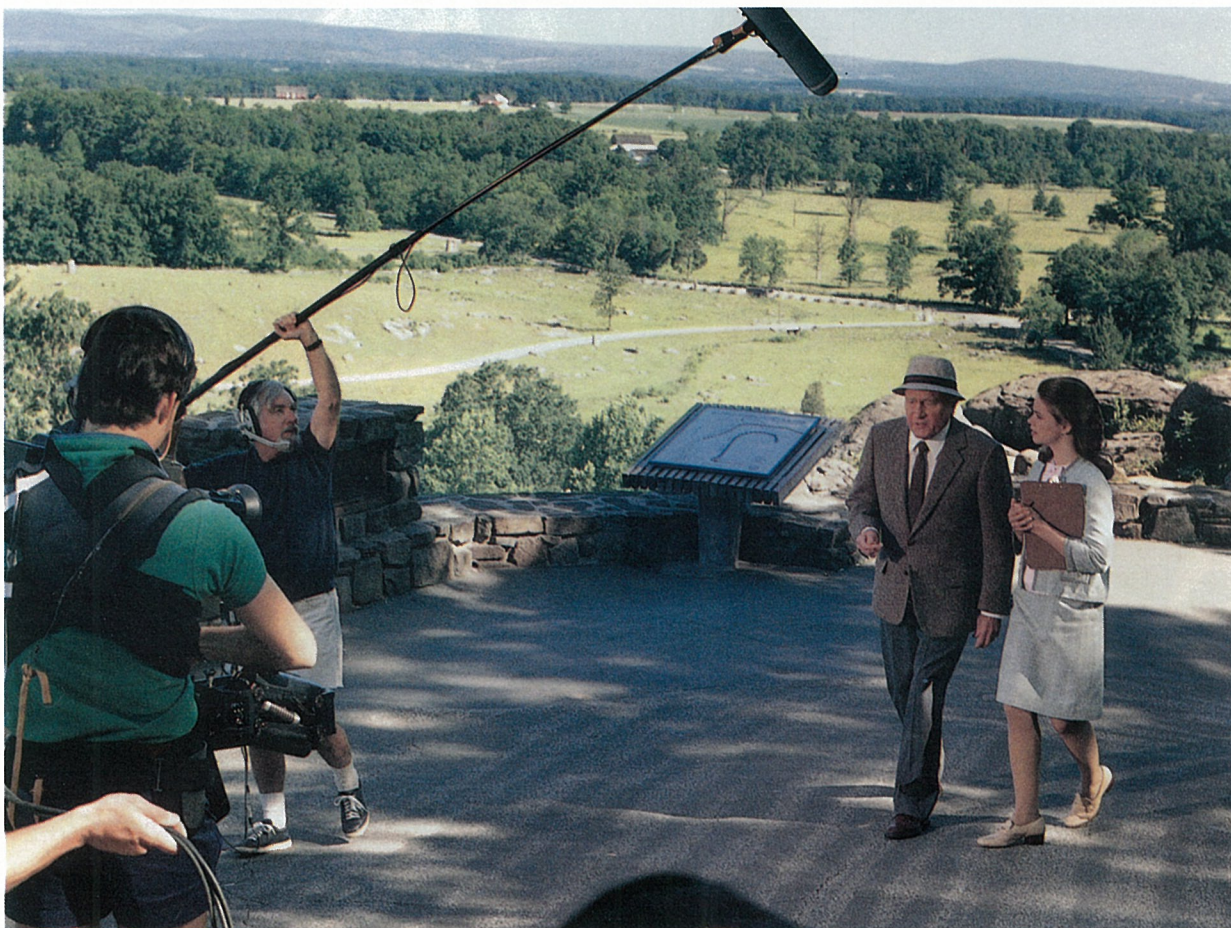
The script follows the chronology of Eisenhower's life. Eisenhower relates that his parents were descendents of immigrant German Mennonite farmers who had strong pacifist feelings. Eisenhower attended the United States Military Academy only because he was attracted by free tuition and the opportunity to play football. After graduation in 1915, he began a military career that covered nearly four decades.

Eisenhower spent World War I in America, training infantry and tank troops for service in France. In the film, he describes how he met and became engaged to Mamie Doud and how, here and in Panama and the Philippines, he worked with World War II Generals George C. Marshall, Douglas MacArthur and George S. Patton.

Shortly after the entry of the United States into World War II, Eisenhower was given greater responsibility, and although he had never held a combat command previously, he later became Supreme Commander of the Allied Forces, responsible for the planning and execution of the invasion of Europe. His popularity with the American people later led to two terms as President, during which he dealt with the growing Cold War, the first movements to abolish segregation and the threat of nuclear weapons.

In playing Eisenhower, Marshall said he was not awed by portraying a famous man with a very familiar face. "I have not tried to imitate Eisenhower," he said. "I have studied him carefully, and I have tried to portray the inner man, to show how he felt and thought. In studying him, I was most impressed by his decisiveness. He would gather all the information he could, he would consult others for their opinions, then he would make a decision. Once the decision was made, he never changed his mind. This strength of his character is what I'm trying to convey."

"We had to take some liberties, though," Marshall said,



Ike on Film The setting selected for the taping of "Ike," a new PBS television production funded by a grant from General Dynamics, was the Gettysburg Battlefield shown in the background. Veteran actor E. G. Marshall, as Dwight David Eisenhower, and actress Alice Haining are shown being taped on Little Round Top, a small hill which dominated the southern portion of the battlefield and which was the site of fierce fighting between Union and Confederate forces on July 2, 1863.

"because we couldn't reproduce Eisenhower exactly. For example, when speaking casually, Eisenhower rarely completed a sentence. He spoke in fragments of sentences. If we had duplicated that trait in the script, it would have looked as if we were mocking him."

"Ike" was produced by David Susskind, whose "The David Susskind Show" is now completing its 28th consecutive year. Among his television credits are "The Play of the Week," "Hallmark Hall of Fame" and such series as "Get Smart" and "N.Y.P.D." His dramatic specials include: "Death of a Sales-

man," "Mark Twain Tonight," "The Diary of Anne Frank" and "Requiem for a Heavyweight."

The Director of "Ike" is Charles Jarrott, who has directed films such as "Anne of a Thousand Days," "Mary Queen of Scots" and "A Case of Libel."

"Ike" is the second PBS profile of great historic figures to be funded by grants from General Dynamics. The first show, "Winston Churchill," was also produced by Susskind and was broadcast by PBS affiliate stations nationwide on June 18th.

Modernized Facility in California Improves Testing of F-111s at -40 Degrees

A Fort Worth team recently completed major refurbishment of the F-111 Cold Proof Test Station at McClellan AFB, Calif. The modernized facility will be used by the U.S. Air Force's Sacramento Air Logistics Center (ALC) in structural testing of the USAF F-111 fleet.

The test program will be the third conducted since F-111s were first delivered to the USAF in the 1960s. The cold proof procedure reconfirms the F-111's structural integrity and makes it one of the most thoroughly tested aircraft in the world.

Cold proof structural tests have been conducted to date on all F-111s at 1,000 to 2,500 flight-hour intervals.

The third series of tests will be conducted at intervals of

from 3,000 to 5,000 flight hours, depending on the particular F-111 model.

It takes several years to cycle the entire fleet through the tests, since they are conducted as a part of planned depot level maintenance, according to Charles S. Bogle, coordinator of the program at Fort Worth.

To simulate critical positive and negative load maneuvers on the F-111's repositionable wings, four test conditions are imposed at two different angles of wing sweep.

"The maximum positive load condition of 7.33g's (7.33 times the force of gravity) results in the wings deflecting approximately four feet at the tips," Bogle said.

The structural loading tests, conducted at minus 40

degrees Fahrenheit, verify the integrity of high strength steel alloy used in the wing carry-through box, wing pivot fittings and certain fuselage bulkheads.

Fatigue cracks of a detectable length are identified by nondestructive test techniques prior to the load tests, said Bogle.

"The critical crack length is significantly smaller for the steel alloy at the subfreezing temperatures imposed during test loading," he explained.

"If the cracks are too small to be identified by non-destructive testing and are of a critical length, they are detected by failure of the part under test load," Bogle said.

"This is a potentially lifesaving measure, because any part that fails during the test might eventually fail in flight."

The McClellan test facility was originally constructed by General Dynamics in 1970 along with others at Fort Worth and Waco, Tex., both of which ceased operation in the early 1970s.

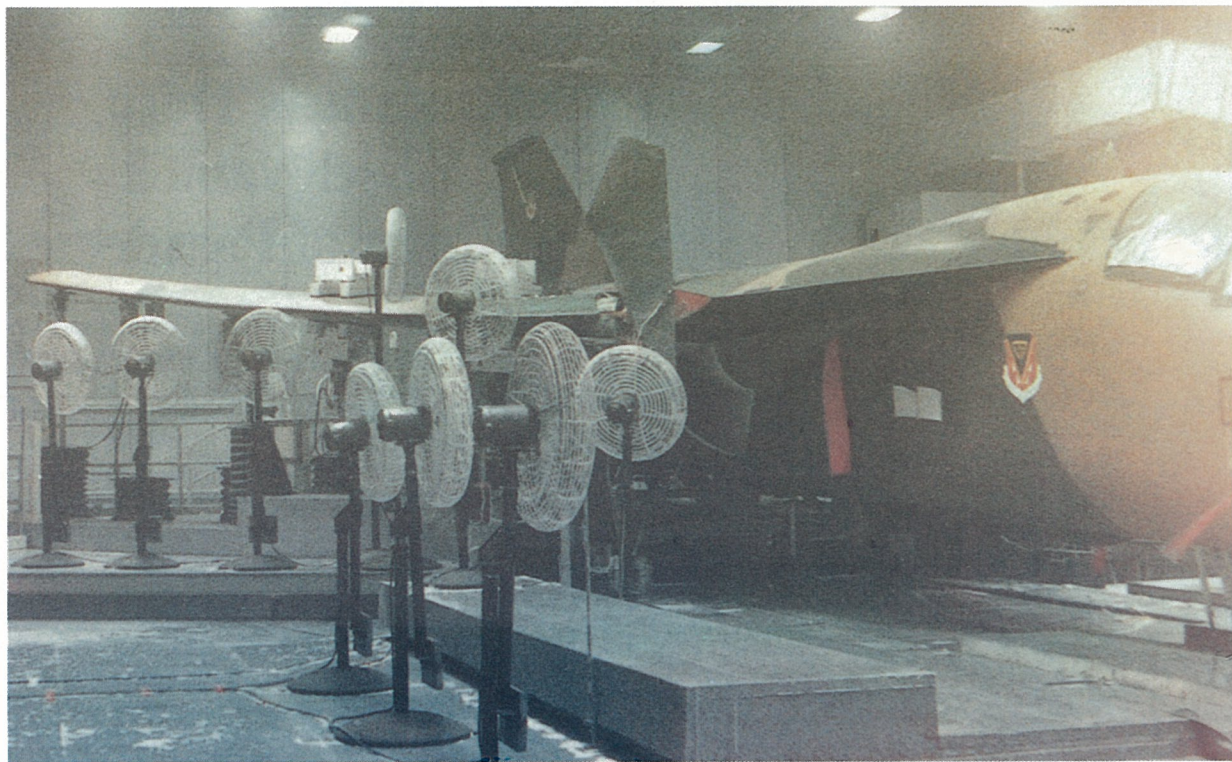
The California facility was modified by General Dynamics in 1973, prior to the second fleetwide test program, to add expanded test conditions. Before the recent refurbishment, much of the facility's original equipment had become obsolete.

The test portion of the facility consists of an environmental test chamber, a control room and associated hydraulic, pneumatic, load control and data, safety and environmental systems. A computer is used to control test loading conditions and gather data during tests.

Structural loads are applied to the aircraft wings with hydraulic actuators, or rams. The low temperatures are produced with a liquid nitrogen air chilling system.

Fort Worth's contract for the refurbishment, awarded in June 1985, covers all design, construction, equipping, integration and demonstration of the testing portion of the facility. In addition, Fort Worth will continue to provide training, maintenance and technical publications assistance to the program through mid-1987.

A similar cold proof facility to test F-111 aircraft operated by the U.S. Air Force in Europe is being built at Filton, England, by British Aerospace Company. "General Dynamics, British Aerospace and Sacramento ALC have been working closely together to ensure equivalent testing at both facilities," Bogle said.



F-111 Cold Proof Test. Hydraulic actuators bend F-111 wing upward to simulate high 'g' load on structure in cold proof test at USAF's Sacramento Air Logistics Center. The tests are conducted at temperatures of minus 40 degrees Fahrenheit, as evidenced by frost in area, in a chamber that was recently refurbished by a Fort Worth team.

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Stoker and Morris Named to VP Posts At Corporate Office

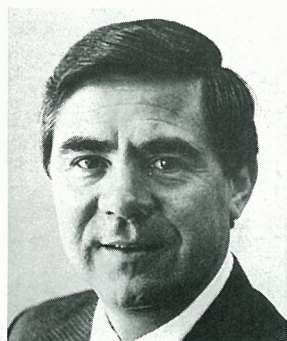
General Dynamics has announced the appointments of C. Robert Stoker and Robert A. Morris to vice president positions at Corporate Headquarters in St. Louis.

Stoker has been elected Corporate Vice President and Treasurer, effective Oct. 1st. He succeeds Wayne Wells, who has retired from the company after 14 years in that position.

Morris has joined the company as Vice President of Communications, a new position that includes responsibility for external and internal communications programs, advertising and promotion, corporate charitable contributions and community relations.



Stoker



Morris

Stoker, 57, joined General Dynamics in 1956 and served in estimating and finance positions of increasing responsibility, most recently as Division Vice President and Controller at the Space Systems Division in San Diego.

Stanley C. Pace, Chairman and Chief Executive Officer, said, "Bob Stoker brings 30 years of demonstrated performance in our aerospace operations to this very important position. We are very fortunate to add a man of his experience to our corporate staff and look forward to his valuable contributions."

Stoker was Manager of Financial Planning and Control at Convair from 1973 to 1978, when he was named Controller at the Electronics Division. In 1983, he became Vice President and Controller at Electronics, moving to his most recent position at Space Systems in May 1985.

A 1950 graduate of the University of Kansas, where he

(Continued on Page 2)



Egyptian Aircraft Delivery. Dignitaries from the Arab Republic of Egypt and the U.S. shared the limelight recently when the first F-16C was delivered by Fort Worth to the Egyptian Air Force. Herbert F. Rogers, Vice President and Fort Worth General Manager (at the podium), was master of ceremonies for the delivery festivities.

Egyptian Air Force Accepts First of 40 F-16Cs In Delivery Ceremony at the Fort Worth Plant

The air force of the Arab Republic of Egypt took delivery of its first F-16C multimission fighter in a recent ceremony at Fort Worth. Egypt is the first foreign nation to join the United States in having both F-16A/B and F-16C/D aircraft in its inventory.

Acceptance papers for the single-seat Fighting Falcon were signed by Air Marshal Mohamed Abd al-Hamid Helmi, Commander of the Egyptian Air Force. The aircraft is the first production F-16 powered by the Pratt & Whitney F100-PW-220 engine.

Deliveries under Egypt's initial order of 40 F-16A/B aircraft were completed in 1983. An additional 40 aircraft are to be delivered under the follow-on contract.

"The first Egyptian F-16C delivery represents the truly dedicated effort of both Americans and Egyptians," Air Marshal Helmi said. "The F-16C is a significant addition to the existing F-16s in Egypt, which have been serving successfully since 1982."

"This event represents a major milestone in Egyptian-American friendship," the air marshal said. "On behalf of the Egyptian Air Force, I would like to thank the U.S. Air Force, General Dynamics and every (subcontractor) company that participates in the manufacture of the F-16. Let's all hope that this aircraft will see only peace in Egypt."

Maj. Gen. Bradley C. Hosmer, Assistant Deputy Chief



of Staff for Programs and Resources, speaking on behalf of the USAF, noted, "The program serves as an excellent example of the dedicated cooperation between the U.S. Government and the Arab Republic of Egypt in our mutual goal of peace in the Middle East."

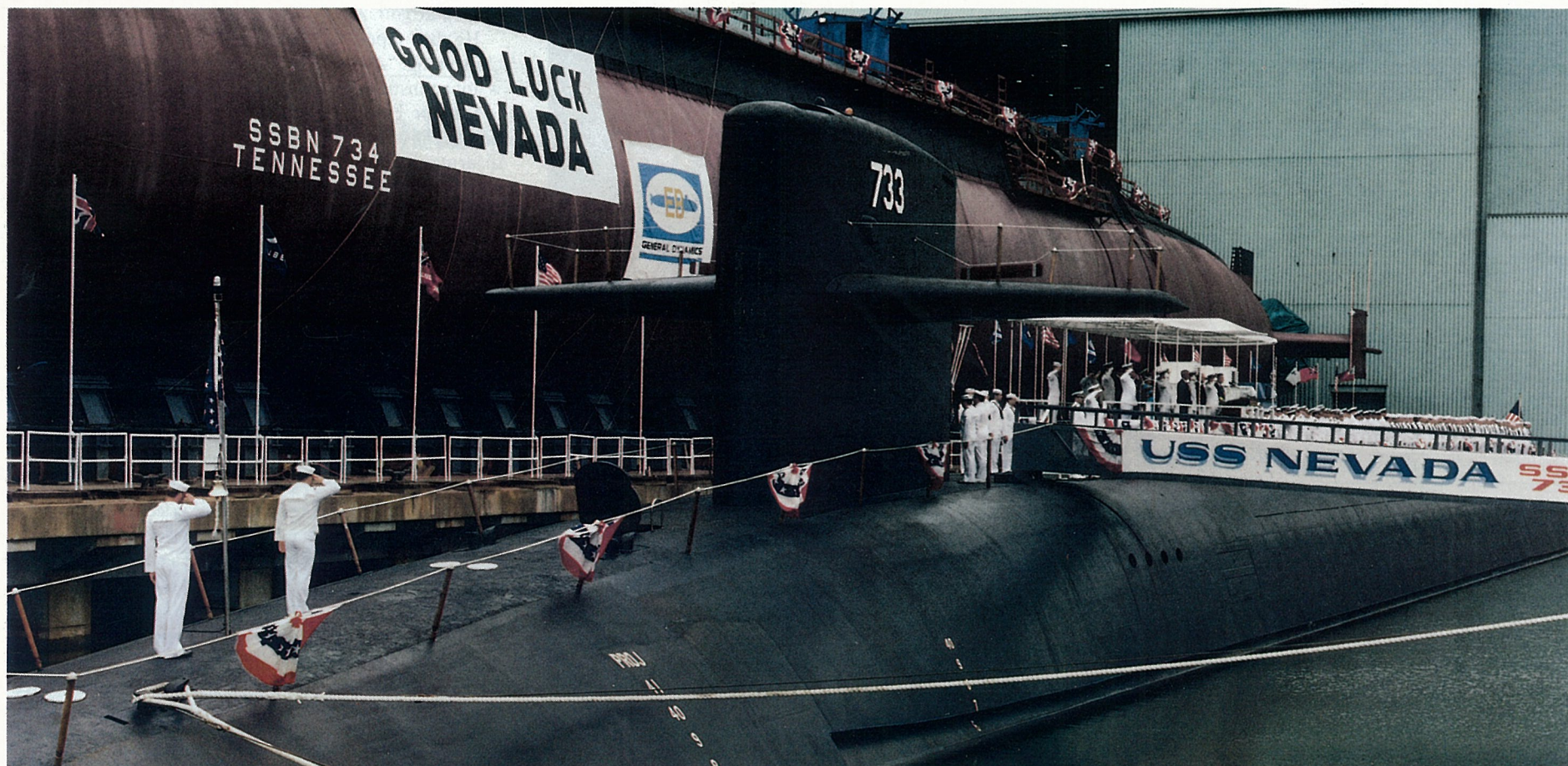
Maj. Gen. Robert D. Eaglet, USAF's Deputy Commander for the F-16, said, "The F-16 can boast of having the best safety record for a single-engine aircraft in the entire history of aviation. That reflects very positively on the very sound design, performance and flying characteristics of the F-16."

General Eaglet also lauded the high mission-capable rates that F-16C/D aircraft have been achieving since they were introduced to the USAF inventory. "The men and women of General Dynamics can have justifiable pride in having produced such a remarkable weapon system," he said.

James R. Mellor, Executive Vice President-Marine, Land Systems and International, said, "This aircraft, coupled with the talent and drive of the Egyptian Air Force, makes an unbeatable combination."

In addition to Air Marshal Helmi, Raouf Ghoneim, Deputy Chief of Mission of the Egyptian Embassy in Washington, D.C., and Dr. Fouad Youssef, Consul from Houston, represented the Egyptian Government.

"This delivery is an expression of the importance that our country places on the relationships between the United States and Egypt," said Herbert F. Rogers, Vice President and Fort Worth General Manager, who was master of ceremonies. "We at General Dynamics are extremely proud to be a part of that relationship."



Newest Trident. With a friendly sendoff from a sister ship and her crew saluting on deck, Nevada, the nation's eighth Ohio-class Trident submarine, officially joined the fleet during commissioning ceremonies Aug. 16th at Electric Boat's Land Level Facility graving dock at Groton, Conn. (See related story on Page 2)

Indonesia Agrees To Buy F-16A/Bs

The government of Indonesia recently signed a letter of offer and acceptance for the purchase of 12 F-16A/B aircraft, ending an intense, months-long competition between General Dynamics and the French firm Dassault-Breguet, which builds the Mirage 2000 fighter.

The U.S. State Department, in announcing the sale, said the purchase is for \$337 million, including spare parts, maintenance and training.

Indonesia is the 15th nation to order the F-16 Fighting Falcon. It also will become the third country in Southeast Asia to procure the F-16 for its defensive fleet. Singapore and Thailand were the first two nations in that area to announce plans to purchase Fighting Falcons.

Currently, more than 1,570 F-16 multimission fighters have been delivered to the United States Air Force and the air forces of eight other nations, with deliveries to additional nations later this year and in the years to come. More than 2,500 additional F-16 aircraft are expected to be delivered through the mid-1990s.

Stoker and Morris Named to VP Posts

(Continued from Page 1)

received a Bachelor of Science degree in Business Administration, Stoker is an active member of the Financial Executives Institute. In 1981, he was the recipient of the National Management Association's Silver Knight Award.

Morris, 52, joined the company Sept. 1st after serving for 22 years in increasingly responsible information and public affairs positions with Borg-Warner Corporation and International Business Machines Corporation.

"We have placed a high priority on strengthening our communications programs, and we are very pleased that this effort will be led by such a fine executive of proven ability," Pace said.

Since 1977, Morris has served as Vice President-Communications for Borg-Warner, where he was a member of the company's Policy and Planning Committee, Budget Committee and Foundation Board. He also was a member of the Board of Directors of Borg-Warner's six major business groups and subsidiaries. Morris joined IBM in 1964 as an information representative in the Data Processing Division in Chicago, Ill. He then advanced through positions of increasing responsibility, including Manager of Information in IBM's Corporate Headquarters and Director of Communications for Americas Far East Corporation in Mt. Pleasant, N.Y.

Morris was graduated from Northwestern University in 1956 with a Bachelor of Science degree in Journalism and received a Master of Science degree in Journalism from Northwestern in 1957.

He has been active in a number of national and Chicago-area business and professional organizations, including the Public Affairs Council, Chicago Public Relations Clinic and the Machinery and Allied Products Institute.

Savings and Stock Investment Plans

Annual Rate of Return for the 12 Month Period Ending:

	June 1984	June 1985	June 1986
Salaried			
Government Bonds	6.3%	16.4%	12.9%
Diversified Portfolio	(12.1)%	36.8%	37.6%
Fixed Income	12.2%	12.4%	12.2%
Hourly			
Government Bonds	6.3%	16.4%	12.2%
Diversified Portfolio	(12.6)%	36.3%	38.7%
Fixed Income*	N/A	N/A	12.1%
GD Stock Closing Price	\$52.50	\$74.38	\$76.50

* Fixed Income effective 6/30/85

GENERAL DYNAMICS

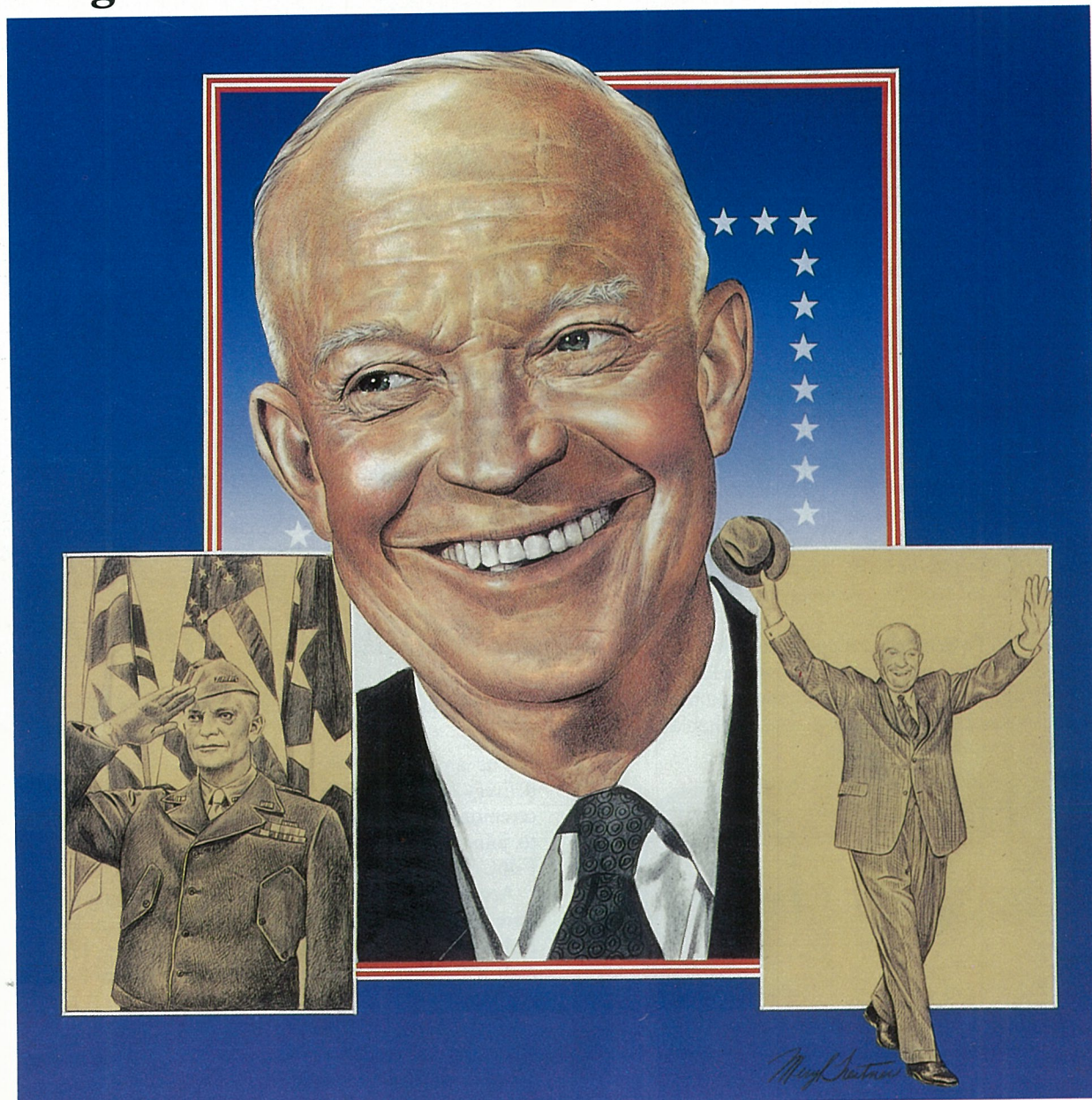
World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, Dean Humphrey, Jack Isabel, Jerry Littman, Evelyn Murphy, Jack Price, Jim Reyburn, Tom Rule, Joe Stout, Z. Joe Thornton

Program on Eisenhower to Be Aired on PBS



"Ike" to be Aired on Public Television. This painting by artist Meryl Treatner was commissioned by General Dynamics for use by television publications in connection with articles or reviews of the company-sponsored program "Ike" to be broadcast by PBS on Oct. 15th. Advertising for "Ike" will appear prior to the telecast in selected editions of Time, U.S. News & World Report, Newsweek, the national edition of the Wall Street Journal, most editions of TV Guide and local newspapers where General Dynamics has major facilities.

World War II Battleship Nevada Remembered At Commissioning of 8th Trident Submarine

For 400 former crewmen of the World War II battleship *Nevada*, Aug. 16, 1986, was a memorable day.

The crewmen and their families were among the 5,000 guests on hand as the nation's eighth Trident submarine officially joined the Navy's fleet during a commissioning ceremony at Electric Boat's, Groton, Conn., shipyard.

As they watched the ceremony unfold, some crew members no doubt let their memories roll back to Dec. 7, 1941, when the *Nevada* was the only one of the eight U.S. battleships at Pearl Harbor, to get under way during the surprise Japanese air attack. The *Nevada's* action carved a special niche in naval history for the ship.

Now, nearly 45 years later, the crew members looked on proudly as three of their shipmates, all veterans of the Pearl Harbor attack, took part in the time-honored ceremony for a new *Nevada* (SSBN 734).

Retired Capt. Donald Ross, who was engineering officer that day, presented the ship's log to his counterpart on the submarine. Retired Capt. Joseph Taussig (now Assistant Navy Secretary for Safety), the officer of the deck, handed over the ship's long glass and Retired Lt. (Cmdr.) Roy Johnson, who was the quartermaster, assisted with unfurling the commissioning pennant.

The battleship veterans "have gone out of their way to instill their spirit in the sub crew and help pass the torch to a new generation," said Capt. Frederic Rohm, precommissioning officer of the submarine and Commander of its Blue Crew, in praising the support and interest of the former crew members.

Nevada Senator Paul Laxalt was the principal speaker during the hour-long ceremony at the graving dock in Electric Boat's Land Level Submarine Construction Facility. His wife, Carol, who also attended the commissioning

ceremony, had christened the submarine on Sept. 14, 1985, in the same dock.

Laxalt said that the Soviet Union is intimidated by the strength of the sea-based leg of the U.S. military triad, of which *Nevada* is a part.

"They can't touch our sea capabilities," he said. "This, in the minds of the Soviet planners, will deter them from the first strike."

He then repeated a sentiment he expressed during the christening: "As far as this senator is concerned, this ship is not an instrument for war, it's an instrument for peace."

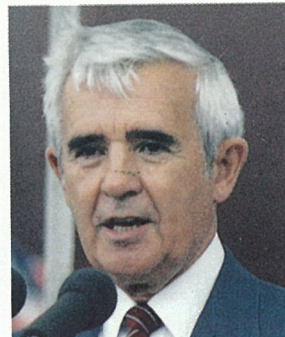
Senator Laxalt expressed hope that the U.S. and the Soviet Union will be able to develop a policy of verifiable disarmament. "As President Reagan has stated many times, a nuclear war can never be won and must never be fought," he said.

U.S. Rep. Barbara F. Vucanovich of Nevada, after recounting the battleship's action at Pearl Harbor, told the Trident submarine's crew, "We charge you with keeping the peace."

General Dynamics Chairman Stanley C. Pace called the *Nevada* the "quintessence of American high technology" and the crew the world's finest in education, training and attitude.

Other dignitaries who attended the ceremony included Adm. Kinnaird McKee, Director of the Naval Nuclear Propulsion Program; Vice Adm. David L. Cooper, Commander, Submarine Force Atlantic Fleet; Nevada Gov. Richard Bryan; U.S. Rep. Sam Gejdenson of Connecticut and Fritz Tovar, Vice President and Electric Boat General Manager.

Nevada will be the last ship assigned to Submarine Squadron 17 at the West Coast Trident base at Bangor, Wash. Successive ships will be based at the King's Bay, Ga., base now under construction. Electric Boat delivered the ship to the Navy on Aug. 7th — 85 days ahead of contract schedule. She is the 15th consecutive ship delivered early. The division has five more Tridents under construction.



H. Cushman Dow Named Convair/Space Systems' VP and General Counsel

H. Cushman Dow has been appointed Division Vice President and General Counsel for the Convair and Space Systems divisions.

Dow joined the company in 1962 as Chief Counsel for the former Astronautics Division. In 1965, he became Chief Counsel for Convair following its merger with Astronautics. Since 1974, he has been General Counsel for Convair.

Prior to joining the company, Dow was area attorney for the Pacific Telephone and Telegraph Company in



Dow Sacramento, Calif., and the Western Pacific Railroad Company in San Francisco. He was associated with a private law firm before entering corporation law.

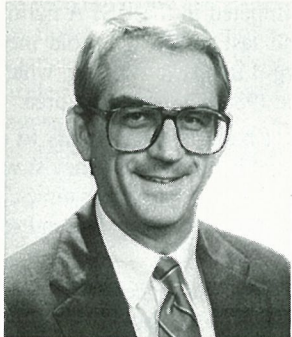
Dow was graduated from Yale University in 1941 with a Bachelor of Arts degree in History and International Relations. He received a Juris Doctor degree from Harvard University in 1948 and in 1981 received an honorary Doctor of Laws degree from National University in San Diego.

Dow is a member of the American Bar Association, the Federal Bar Association and the San Diego County Bar Association. He is a lecturer in the field of International Space Law, a former President of the San Diego Chamber of Commerce, former President of the San Diego Rotary Club and a member of the Board of Directors of the California Manufacturers Association and the American Arbitration Association.

Stoneburner Appointed VP Of Contracts and Estimating At Space Systems Division

Ronald D. Stoneburner has been appointed Division Vice President-Contracts and Estimating for Space Systems Division. Stoneburner, 49, joined General Dynamics in 1967 as a contracts analyst for Convair. He later served in a series of increasingly responsible positions, including Contract Administrator at Convair, Contract Manager at Electronics and Corporate Manager-Contracts at the Corporate Office. In 1982, he was named Director of Contracts at Pomona.

Stoneburner received a



Stoneburner Bachelor of Science degree in Production Management in 1966 and a Master of Business Administration degree in Marketing and Administration in 1967, both from Indiana University.

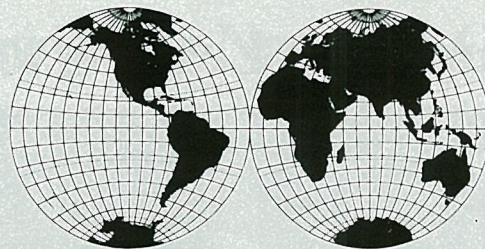
Electronics Names Bohlman Division Vice President of Contracts and Estimating

Denis E. Bohlman has been appointed Division Vice President-Contracts and Estimating for the Electronics Division. Bohlman, 51, had been Corporate Director-Contracts at Corporate Headquarters in St. Louis since 1983. He joined the company in St. Louis in 1979 as Corporate Manager-Contracts after serving for three years as Director of Contracts for the Admiral Corp. and 10 years as Vice President-Administration and then President of Admiral Systems Corp.

Bohlman began his career



Bohlman in contract administration with ITT in 1960 after two years as an Air Force Procurement Officer. He received a Bachelor of Science degree in Industrial Engineering in 1957 from the University of North Dakota and a Master of Business Administration degree from the University of Chicago in 1972.



Around the World

CHQ: Robert J. Burns joined as Corporate Headquarters Facilities Manager . . . Alexandra E. Rex as Network Specialist . . . Mark E. Jachec as Internal Audit Chief . . . Jerome L. Nelson as Senior Information Systems Auditor . . . John W. Grosskopf transferred from Freeman United Coal and was promoted to Corporate Manager-Environmental Resources . . . Herbert L. Ellis Jr. transferred from Fort Worth and was promoted to Corporate Manager-College Relations . . . Cynthia A. Croft was promoted to Corporate Manager-Plans & Analysis-Finance . . . John Wenberg to Corporate Manager-Equity Investments . . . Carol L. Elmers to Corporate Manager-MEP . . . Carolyn J. Picker to Corporate Huntsville Representative.

Fort Worth: Paul C. Leamer was appointed to F-16 MSIP Program Director . . . Christopher M. Hatch to Financial Planning/Controls Director . . . Wesley E. Spreen to Director-F-16 International Coproduction Office/Europe . . . M.R. Armour, Neil A. Collins, Louis A. Heaton, Leon H. Noyes, Rick A. Shook and Mark A. Steeb to Senior Field Service Engineer . . . George B. Bailey to Production Management Specialist . . . Jerry W. Baird to Procurement Chief . . . Mark A. Bartle to Senior Manufacturing Engineer . . . Anthony O. Brancato to Manufacturing Support Equipment Supervisor . . . Sharyl D. Brown to Logistics Supply Supervisor . . . William H. Carrell to Manufacturing Engineering Specialist . . . Wilson C. Carlyle and Robert L. Riney to Production Specialist . . . Kevin R. Cavasos to Project Coordinator . . . Leslie P. Couch to Purchasing Agent . . . Steven T. Feltman to Traffic Foreman . . . Judy A. Fleming to Logistics Group Engineer . . . Walter K. Gilland and Mack E. Trimmier to General Foreman . . . William L. Glaze to Senior Quality Control Field Engineer . . . Edward O. Goodson to Senior Program Analyst . . . Henry Haberzette to Technical Group Supervisor . . . Mark A. Hamlin and Eldon S. Scott Jr. to Foreman . . . Jimmy C. Holder to Tool Manufacturing General Foreman . . . Louis R. Kirchdorfer to Engineering Chief . . . Dan W. Luper to Logistics Engineer . . . Clarence E. Martin to Quality Assurance Field Engineer . . . William G. Miller to Tooling Supervisor . . . Barry P. Mitchell to Inspection General Supervisor . . . Melvin O. Roberts, Craig C. Simpson, James D. Smith and Clifford W. Wilkinson to Field Service Engineer . . . Brian N. Rogers to Financial Analyst . . . Frank I. Rutherford to Principal Field Service Engineer . . . Michael D. Shirley to Inspection Supervisor . . . Daniel K. Shubert to Procurement Manager . . . Philip V. Vandiver to Industrial Engineering Supervisor . . . Brian M. Waldrop to Quality Control Field Engineer.

Valley Systems: William L. Chittick was appointed to Industrial Engineering and Special Projects Director.

Electric Boat: John McGovern has been promoted to Design Support Chief . . . Clement McGrath to Design Chief . . . James Donahue to Contract Evaluation Chief . . . Joseph Pulawski and Michael Rotondo to Engineering Chief . . . Richard Allen to Quality Audit Supervisor . . . Kenneth Blomstedt, William Brazicki, Carol Duckett, Douglas Mowell, Peter Salmoiraghi, John Schmidt and David Stepler to Engineering Supervisor . . . James Cameron to Data Management Supervisor . . . Leonard Cooper to Design Supervisor . . . Joseph Lanier and Frank Skewes to Technical Writing Supervisor . . . David Pacheco to Engineering Designer . . . Kevin Sheehan to Logistics Supervisor . . . George Worboy to General Foreman . . . David West to Site Superintendent . . . Woodman White to Radiological Control Foreman . . . Bruce Cresser, Galen Fish, William Fonteneau, Larry Kudlach, William LaFountain, Edward Stack and David Williams to Foreman.

Convair: Richard G. Huntington was appointed to Cruise Missiles Planning & Requirements Director . . . Daniel C. Owens to Industrial Security Director . . . Richard C. Anaya, Terri L. Irvin and Debra A. White were promoted to Manufacturing Control Operations Supervisor . . . Richard A. Brand to Engineering Chief . . . William Carpenter and Dee M. Doiron to Plant Services Operations Supervisor . . . James L. Doherty to Industrial Engineering Operations Supervisor . . . Jimmy R. Kidwell Jr. to Manufacturing Chief . . . Wendy E. York to Publications Chief . . . Candice J. Shine to Plant Services Operations General Supervisor.

Space Systems: Michael M. Guska was promoted to Quality Assurance Administration Manager . . . Robert D. Williams Jr. to Quality Assurance Manager . . . David W. Wolff to Program Quality Assurance Manager . . . Daniel A. Heald to Engineering Manager . . . Jeffrey W. Owens and Darrell D. Stinson to Procurement Chief.

Pomona: Edna M. Boudreau was promoted to Proposal Development Administrator . . . Michael J. Conner to Procurement Cost Analyst . . . Scott H. Davis to Staff Engineer . . . Judith A. Greer to Senior Configuration and Data Management Analyst . . . William W. Hamel Jr. and Roger L. Johnson to Senior Project Engineer . . . Richard A. Mennen to Group Engineer . . . Randy K. Judkins to Senior Property Auditor . . . Frank D. Puthuff to Design Specialist . . . Kurt R. Swigart to Project Coordinator . . . Larry R. Whitney to Senior Manufacturing Development Specialist.

Land Systems: Frank J. Rupersburg was appointed to Industrial Security Director . . . James Biermann was promoted to Marketing Manager . . . Lawrence M. Danko and Robert J. Shaw to Material Control Chief . . . Kenneth J. George to Material Planning Specialist . . . Michael H. Pyszora and Frank Sophia to Quality Assurance Specialist . . . Alan P. Kerans to Engineering Services Chief . . . Kanti Bhuvra to Engineering Specialist . . . David V. Strimling to Engineering Chief . . . Francis E. Alloway to NDT Services Supervisor . . . Linda I. Knoll to Material Planning & Control Supervisor . . . David R. Schoener to Senior Procurement Representative . . . John D. Ott to Program Administrator . . . Dijo V. Christian to Senior Quality Assurance Engineer . . . Judith A. Ferraro to Senior Marketing Coordinator . . . Robert J. Karwowski to Staff Environmental Engineering Specialist . . . Bruce F. McDonald and Edward D. Lewis to Quality Assurance Engineering Specialist . . . Jeffrey C. Zatkoff to Quality Assurance Engineer . . . Ravi K. Dhar to Senior Quality Assurance Engineer . . . Rayburn A. Hartwig to Engineering Chief . . . William W. Carter to Superintendent . . . Clifford P. Seputis to Foreman.

GDSC: Robert L. Taft was promoted to Facility Maintenance Supervisor . . . Manuel Zurita to Senior Aircraft Specialist.

Data Systems: At Eastern Center, Louis E. Gideon was promoted to Financial Control Chief. At Headquarters, Bernard E. McLaughlin transferred from GDSC and was promoted to Business Offset Development Manager . . . Michael W. Baloga transferred from Central Center and was promoted to Senior Software Engineer.

Free Offset Tours to Turkey and the Orient Now Being Offered to Group Organizers

General Dynamics employees, retirees or friends are now eligible to travel free on an offset program tour if they organize a group of 15 or more for any tour to Turkey or to the Orient.

"This free travel is applicable to all our tours for the remainder of 1986 and for 1987," according to Nazli Weiss, Manager of Corporate Offset Tourism.

Free travel for the organizer of a group has been arranged by the Corporate Offset Tourism Department in conjunction with VIP Tourism, Inc., and Jetset Tours.

"These tours are being offered as an important part of the company's offset commitment to put currency back into the economies of Turkey and Korea, which have purchased the F-16," Weiss said.

There is space available for the Oct. 10th tour to Turkey, which will be escorted by Barbara Walker, Curator of the Turkish Archives at Texas Tech University. This tour is discounted \$200 per person off the list price.

Tours to the Orient are on-going and include visits to Seoul, Singapore, Tokyo, Taipei, Bangkok, Hong Kong and Beijing. These tours are discounted \$50 per person.

For brochures and further information on Turkish tours, call VIP Tourism toll free at (800) 847-8875. For information on the Orient tours, contact the local General Dynamics travel office or call (800) 243-6346 (outside Connecticut), or call (314) 889-8324 at the Corporate Office.

Automated Warehouse Leading to Integrated Manufacturing By Julie Andrews

Three years ago, Convair decided to streamline its warehouse operations through automation. Today the successful application of the automation design is one of the key elements in Convair's plans for a totally integrated manufacturing system.

In 1983, after looking at an increasing number of stockrooms that relied on time-consuming, manual methods, Convair decided to improve its operation. Proposed was an automatic warehouse with a computer-controlled mechanical system that could retrieve parts from a high-density storage facility. Later that year, Convair purchased a package of hardware and software from Litton Systems and construction began on the Automatic Warehouse System (AWS).

Physically, AWS is a 26,000-square-foot, totally enclosed facility that will eventually consolidate both procured material and in-house manufactured parts from more than 20 stock locations. It is divided into a bulk storage area and an automated miniload area, which has the capacity to store up to 163,000 parts by contract.

During operation, five high-speed cranes take out or put away any of the more than 15,000 container pans in the floor-to-ceiling racks. A closed-loop conveyor system connects the aisles to workstations, where operators perform the usual stockroom functions of issuing, storing, transferring or auditing, aided by instructions on the computer terminals. At any one time, more than 1,400 different parts can be active on the conveyor loop. Orders are filled in as little as 90 seconds on-line or from data previously entered into the system.

AWS keeps track of inventory by reading bar-coded labels generated during receiving or issuing of material, similar to the way supermarket checkout stations tally prices on grocery items. AWS is updated automatically as stock transactions take place. Because AWS talks to other Convair manufacturing, material and procurement systems, those data bases are updated as well when the physical stock activity occurs.

Implementing the system was no small task. "The project was a joint effort by Convair and Data Systems Division-Western Center," said Bill Pickett, DSD-WC Business Systems Development, "to modify four major manufacturing systems so that they would interface with AWS in initiating part movement or accepting transactions from AWS after part movement."



Automated System. Melanie Wilson, Production Audit Analyst, and Jeff Banks, a stock clerk, operate the computer-controlled automated system at Convair's warehouse. High-speed cranes in the aisles in the background can take out or put away any of the more than 15,000 container pans in the floor-to-ceiling racks. On the floor level is the closed-loop conveyor system that connects the aisles to the work stations where the stock transactions take place.

To ensure system synchronization and data integrity, extensive testing and inventory analysis were necessary before operation began. For example, when loading of AWS is completed, more than 110,000 parts will have been analyzed at the contract level. "Our motto was 'quality first'," said Bev Harman, AWS Chief, "both from a systems and a loading standpoint. The system was well thought out and it was tested to the utmost."

System accuracy, a major concern of AWS users, is

being tracked daily and shows significant, sustained improvement over manual stockrooms. AWS has achieved periods of 100 percent accuracy, and the goal is to maintain that perfect standard continuously.

"The key to productivity gains with AWS rests on record accuracy," said Larry Walker, overall AWS system coordinator. "These productivity improvements demonstrate our capability to produce quality items at a faster pace by doing it right the first time."

Company Fencing Club Emphasizes Finesse and Not Swashbuckling

In the best Hollywood traditions of Errol Flynn and the Three Musketeers, a small but growing group of West Coast General Dynamics employees is fast making its collective mark in the fine art of swordsmanship. In their case, however, finesse is more to the point than swashbuckling.

Every week this group of aerospace engineers and technicians, organized as the San Diego Academe d'Armes,

gets together to practice fencing and enjoy the benefits of a brisk athletic workout. The club is only two years old, but with the help of enthusiastic founding members and the financial support of the Convair Recreation Association, it has gained approval from the United States Fencing Association as a sanctioned fencing facility and has sent several members to competitions.

Delia Leonessa, a senior test data analyst for Convair,

competed in the USFA national championships this year and last, winning a gold medal in 1985. Soon, she will begin intensive training, which she hopes will lead her to the 1988 Olympics in Korea.

"I had the opportunity to meet the Italian and French fencing teams when they stayed in San Diego during the 1984 Los Angeles Olympics," said Leonessa. Then, after watching them practice and seeing the Olympic events, she was hooked.

Leonessa fences with the epee, which differs from the other two weapons in fencing, the foil and the saber. Of the three, epee is the most like dueling because the entire body is a target. With foil and saber, only certain areas are targets.

The quickness of epee makes it exciting to watch, according to Patti Richardson, current San Diego County women's epee champ and club president. "Once I saw it, I just knew I wanted to fence," she said. "It requires intuition and mental ability because you have to outthink your opponent."

The exercise benefits of fencing have been compared to sprinting. Quick lunges, thrusts and parrying movements with a five-pound weapon and total concentration provide an intense aerobic experience. Bouts last six minutes for men and five minutes for women. Fencers dress in a special puncture-resistant fencing jacket and wear a full mask.

Because epee is so fast, it must be judged with an electrical apparatus. Wires run from the spring-loaded point down the blade through the jacket sleeve and connect by a long spring-loaded cord to a box that emits a light and sound signal when a fencer has made the hit.

Carlos Garcia, another club member, said that as a youngster in Cuba he always wanted to fence but did not have the chance until he came to work for Convair. "The club provides equipment, the facility to fence and excellent coaching," said club commissioner Garcia, a manufacturing engineer on the Tomahawk program.

Fencing master Paul Brienza, who has fenced with some of the swashbuckling movie stars, coaches the club in technique as well as attitude. "You fence," he said, "mainly with the brain!"

To advance the sport, General Dynamics fencers are appearing throughout San Diego County at various community events to give demonstrations and provide entertainment. They also plan to continue competing in local, regional and national events.



Dynamic Fencers. West Coast General Dynamics employees Delia Leonessa, Carlos Garcia and Patti Richardson (left to right) are fencing friends and sometimes foes at Convair. They are three of the aerospace engineers and technicians who belong to the San Diego Academe d'Armes, the General Dynamics fencing club.

F-16s Replacing Convair F-106s with Florida Air National Guard By Joe Stout

The Florida Air National Guard's 125th Fighter Interceptor Group began replacing its Convair-built F-106s with Fort Worth-built F-16s in a formal ceremony this month at the unit's Jacksonville International Airport base.

The 125th is the first unit to receive F-16A aircraft in a dedicated North American Continental Air Defense role and will receive 18 Fighting Falcons to take the place of 22 F-106s that it has been flying since 1974.

The unit flew another General Dynamics aircraft, the Convair F-102, for 14 years before receiving its F-106s. The F-102, F-106 and F-16 primarily are all single-seat, single-engine fighters designed for superior air combat capability in their generations.

The ceremony was highlighted with an F-16 air show and an air defense scramble demonstration by two F-106 Delta Darts.

Col. Dean T. Biggerstaff, 125th Group Commander, opened the ceremony with a description of the crucial air defense mission. The unit keeps two airplanes on alert at all times, ready to scramble within five minutes to intercept and identify unknown aircraft that are detected on radar monitored by the U.S. Air Force's 23rd Air Division Command at Tyndall AFB, Fla., he said. The 23rd Air Division monitors radar in the nation's Southeastern coastal region on a 24-hour basis.

Colonel Biggerstaff said the 125th Fighter Interceptor Group has been performing the air defense mission with two aircraft on five-minute alert since 1956. To demonstrate, a scramble horn was sounded at the base and two F-106s were taxied from a hangar where they are kept ready at all times. As the aircraft took off in the simulated air defense response, Colonel Biggerstaff explained that two additional F-106s remained in the hangar on alert status, ready in case of a "real" scramble order.

Brig. Gen. James M. Rhodes, Commander of the 23rd Air Division, said the selection of the 125th Group as the first air defense F-16 unit bears testimony to the weight of the group's responsibility and to its outstanding performance in fulfilling its mission.

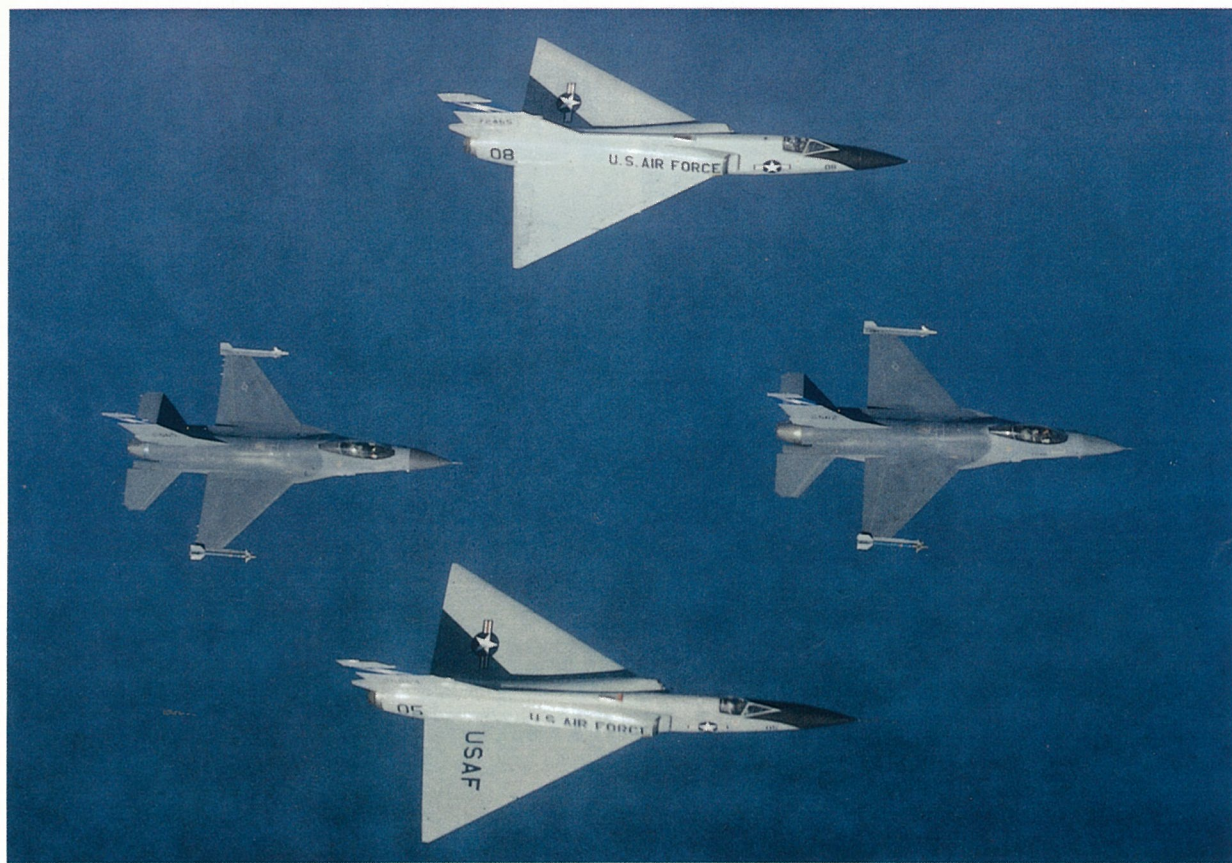
"It has been a long-standing goal of the Air Force and the Air National Guard to increase the capability of the air defense (forces). The F-16 is a quantum jump in capability," General Rhodes said.

Maj. Gen. Robert F. Ensslin, Jr., Adjutant General of Florida, called the F-16 "the finest fighter aircraft in the world" in his remarks at the ceremony. "The unit is prepared to continue its outstanding performance in yet another first-line U.S. Air Force machine," he said, referring to the 125th Group's success with the F-102 and F-106.

The F-16 demonstration was flown by Capt. Smokey Bauman of the USAF's 363rd Tactical Fighter Wing, Shaw AFB, S.C. Spectators were thrilled as Captain Bauman performed rolls, loops, high-g turns and other maneuvers.

Captain Bauman's F-16 and another flown by Capt. Steve Ritter, the 125th Fighter Interceptor Group's first F-16-qualified pilot, joined two F-106s for a symbolic fly-over of old and new aircraft in another ceremony highlight. Colonel Biggerstaff, referring to this flying display and to a row of F-106s on the tarmac, said, "This is probably the last opportunity we will ever have to see this."

The F-106 was flown for the first time in 1956 and went into operational service in 1959. It still holds the world



Flying Old and New Products. The Florida Air National Guard's 125th Fighter Interceptor Group recently began receiving Fort Worth-built F-16s to replace its delta-winged Convair F-106s, which it has been flying since 1974. Both the aircraft types are shown above with the unit's markings. The 125th is the first U.S. unit to transition from F-106s to F-16s and operate F-16s in a dedicated air defense role. The unit's retired F-106s will be modified for use as target drones in air-to-air weapons training.

closed course speed record, Mach 2.41. The F-106 was developed from the F-102 Delta Dagger to accommodate a more powerful engine and more advanced avionics. The USAF currently plans to modify the 125th Group's F-106s for use as target drones, as was done with the F-102s after they were replaced.

Distinguished guests at the event included Brig. Gen. Otha R. Smith Jr., Assistant Adjutant General of Florida; Brig. Gen. Homer H. Humphries Jr., Chief of Staff of

Florida; Brig. Gen. Robert S. Dotson, 23rd Air Division, state government officials and local officials.

Air National Guard officials have said that three additional air defense units in the United States will begin flying F-16A aircraft in 1987 and 1988. An Air Force competition currently is under way for procurement of between 270 and 300 air defense fighters, with a decision expected in November. Fort Worth has submitted two proposals in the competition.

Five Ethics Advisory Groups Appointed to Examine Important Issues

Ethics Program Directors from the company's major locations met in St. Louis in late August to draw up long-range plans to help insure further integration and maintenance of the Standards of Business Ethics and Conduct in the business affairs of General Dynamics.

To attain this broad objective, Corporate Ethics Program Director Kent Druyvesteyn set up five advisory groups, each composed of several Ethics Program Directors. Drawing upon their collective experience, they will form the plans leading to: 1. The fuller development, integration and maintenance of the Ethics Program company-wide; 2. Identification and analysis of opportunities for improving the program; 3. Recommendation of specific

improvements in the implementation of the program.

Each group will closely examine an area of importance to the future of the program. Leland B. Bishop from the Washington Office heads the group seeking means to further develop, integrate and maintain the Standards in the daily business life of the company. Under the direction of John C. Barrons from Convair, another group will examine the effectiveness and the future shape of the program's awareness training. Jerry A. Sills from Fort Worth leads a group charged with assessing the roles of hotlines and other means of communication in the program now and for the years ahead. Led by Richard L. Neal from Space Systems, one group will evaluate the use

of recognition and rewards to more effectively integrate and maintain the Ethics Program. The group under the leadership of Donald D. Skinner from Valley Systems will review and assess the overall effectiveness and responsiveness of the program's broad, long-term objectives and its implementations.

"We have expended most of our efforts this year, the program's first, on increasing awareness via the ethics workshops," Druyvesteyn said at the meeting. "We must build upon this increased awareness by developing, integrating and maintaining processes from which will flow greater knowledge and continued commitment."

Marshall A. Grayson Is Named a Sloan Fellow for Study at MIT

Marshall A. Grayson, Chief of Special Projects Analysis at Fort Worth, recently began a one-year study program at the Massachusetts Institute of Technology as an Alfred P. Sloan Fellow.

Grayson is one of 56 midcareer executives from the United States and abroad who will be awarded master's degrees in management upon completion of the 1986-87 program.

The Sloan program emphasizes the management of change and the importance of human resources. "Those

two things are probably the most important objectives of the curriculum," Grayson said. "One of the biggest benefits will be learning techniques for coping with the changes our industry is facing, such as more competition, changing government policy and rapidly changing technology."

Program participants share information about changes that have occurred or are on the horizon in their respective industries.

Grayson joined General Dynamics in 1979. He holds a bachelor's degree in aerospace engineering from the Uni-

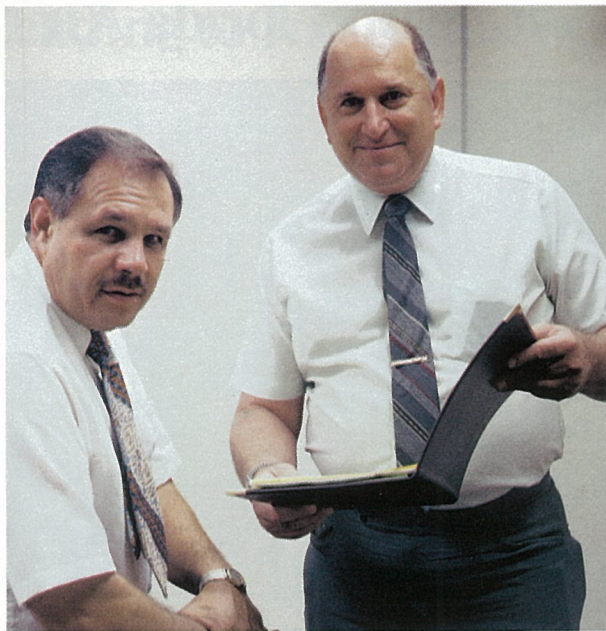
versity of Arizona and a master's degree in engineering management from the University of Missouri at Rolla. He was a fighter pilot in the U.S. Air Force.

Oliver C. Boileau, President of General Dynamics, is an alumnus of the MIT Sloan program. Boileau will address program participants this fall as one of several speakers representing various industries.

Fort Worth will continue its involvement in the Sloan program in future years, said Bill Jones, Chief of Management Development at the division.



Rower (left) and Foster



Hueneberg (left) and Knoell

Teachers Spent Their Summer Vacation Learning Technical Advances at Convair and Electronics

This fall many San Diego high school students are hearing about "What I Did On My Summer Vacation"—but not always from their classmates. Teachers Fred Hueneberg and Tom Foster spent the summer working side-by-side with General Dynamics engineers at Convair and Electronics and are now reporting back to their math and science students on the latest in industry.

Hueneberg and Foster were part of the Industry Fellow Program sponsored by the San Diego Education-Industry High Tech Consortium, a group supported by General Dynamics and other San Diego companies. The program places local science and math teachers in summer jobs at industries with highly technical work forces.

Don Knoell, Convair Chief of Cruise Missile Test Data Requirements and Evaluation, is the General Dynamics representative on the Consortium. "We want to encourage high school students to study math and science in the context of industrial applications," he said. "By giving their teachers first-hand experience with our industries, we are able to have some input into the local education community."

The Consortium's major concern is the projected future shortage of scientific and technical talent. National statistics show a decline in the number of qualified math and science teachers and general student disinterest in studying those demanding subjects.

The summer experience gave the teachers more than just a look at current technology. Fred Hueneberg worked under the guidance of Fred Major, Project Engineering Chief at Convair, to refurbish Tomahawk cruise missiles for use in ground tests. "I worked with many different departments during the summer," said Hueneberg. "I plan to emphasize two major lessons with my students: one,

that good communication skills are necessary in a high-tech job, and, secondly, how important reliability and accuracy are in producing complex hardware."

Tom Foster worked on instructional materials for a new computer system in Jim Rower's Secure Systems group at Electronics. In turn, he gained experience with the main operating systems in use at the division, which he will share with his computer science classes. "One of the biggest challenges in my teaching," Foster said, "is convincing students to remain in the educational system." Using the Data Systems guides on in-plant computer training, he is showing his students that education is an ongoing process.

"The program is a good opportunity to get our ideas on education back to the schools," said Nick Stavros, computer design specialist at Electronics, who worked with Foster. "We want to stress that understanding computers is more than being able to use a particular software product."

"It's important to keep educators up-to-date not only on technology," added Knoell, "but also on the way we do business with such issues as ethics and proper time-charging."

The General Dynamics mentors were highly pleased with the contributions of the Teacher Fellows to work at the divisions and their quick integration into the work force. "We have brought in a qualified educator who is contributing to our product," said Rower. "As a result of our working together, we will have more qualified engineering graduates entering the job market. That will benefit General Dynamics and the entire engineering profession."

Electronics Honored For Efforts in Aiding Handicapped Group

Electronics Division has received a special award from the Defense Contract Administration Services for its Small/Disadvantaged Business outreach program.

The award was presented to M.R. (Mel) Barlow, Vice President and General Manager of Electronics Division, by Capt. D. D. Christopher, USN, DCAS Plant Representative.

It was awarded for the division's exemplary job of finding ways to support and counsel small or disadvantaged businesses in becoming viable suppliers.

Betty Fleming, Small Business Administrator in Electronics' Material function, heard about the quality work done by the Association of Retarded Citizens (ARC), a subsidiary group of the National Industries for the Severely Handicapped. Fleming recommended to the Material Department that the organization be provided with an order for wooden shipping containers. ARC employees built the containers and delivered them ahead of schedule and under cost.

The relationship between ARC and Electronics has grown from an initial \$109 in business in 1983 to more than \$19,000 in 1985. Products ordered from ARC now include storage racks, harness racks, bookcases and shipping pallets.

Lewon D. Simpson Assumes Responsibility for Material Acquisitions at Fort Worth

Lewon D. Simpson has been named Vice President-Material at Fort Worth.

Simpson has been with Fort Worth 19 years, serving in various procurement positions as a buyer, senior buyer, technical buyer, purchasing agent, Chief of Procurement and, most recently, Manager of Procurement. He also served as Material Project Manager of the F-16/79 program and was assigned in 1980 to develop, implement and manage the F-16 Industrial Technology Modernization Program.



Simpson

As Vice President-Material, he is responsible for all of Fort Worth's material acquisitions, including worldwide activities in the F-16 program.

Simpson attended the University of Texas at Austin.

Gregory Henderson Named SAE Fellow

Gregory W. Henderson, an engineering specialist in metallic materials and process engineering at Fort Worth, has begun a one-year assignment with the Office of Science and Technology Policy in Washington, D.C., as the first Fellow of the Society of Automotive Engineers (SAE) selected to serve with the Executive Office of the President.

The SAE is sponsoring Henderson as a senior policy analyst in the office of the Assistant Director for General Science. In announcing the appointment, an SAE spokesman said Henderson's task is to provide the White House with engineering expertise based on his experience in the industrial sector.

Henderson's appointment came after a nine-month selection process. He previously served as Chairman of the Texas Section of SAE and is a member of the society's Aerospace Metals Engineering Committee.

The professional association is the first organization to sponsor a Fellow representing a specific area of technology in the Office of Science and Technology Policy. Henderson will advise the White House on scientific and technological considerations involving the economy, national security, foreign relations, the environment and recovery and use of resources.

The Office of Science and Technology Policy also assists the National Science Foundation, the Patent Office, the National Bureau of Standards, the Federal Aviation Administration, the Department of Energy and other federal agencies.



STARS Van Developed. General Dynamics Services Company has developed a Global Positioning System (GPS) mobile ground station for providing position, time and velocity information and for testing integration of the GPS into military or commercial equipment. Called the Satellite Tracking and Reference Station (STARS), it is mounted in a commercial 3/4-ton van, which is based at the Yuma Proving Ground in Arizona. The STARS van also can be used in surveying and point positioning and waypoint navigation. Supervising the STARS operation is Ed Weston, Engineering Specialist with the General Dynamics Services Company (shown above in the van's driver's seat). General Dynamics has been deeply involved with the testing, data analysis and integration of GPS receivers into aircraft such as the F-16, B-52, F-4, A-6, C-141, P-3 and UH-60, as well as ground vehicles such as the M60 tank and M113 armored personnel carrier.

Advanced Reconnaissance Capability Demonstrated Using an F-16D

An F-16D equipped with a Fort Worth-built aerial reconnaissance pod recently demonstrated "near-real-time" reconnaissance capability for the first time in a series of test flights at Edwards AFB, Calif.

The flights marked the first all-up trials of the pod system's video management and data link equipment, which allows in-flight editing of imagery and subsequent transmission of selected video frames to ground stations.

The near-real-time designation is derived from the fact that Fort Worth's pod design makes usable reconnaissance information available to command posts almost instantly, in contrast to the several hours of turnaround time that is normally required with reconnaissance systems using conventional, film-camera sensors. Near-real-time recce capability has been a long-sought goal of the U.S. Air Force.

All test objectives were met in the flights and the pod equipment was shown to be highly reliable, said Paul A. Henkel, F-16 Reconnaissance Program Manager. High quality imagery was obtained with the pod's sensors on each of the flights, he said.

Several visitors from the USAF and allied air forces observed the test program in progress at the Air Force Flight Test Center, and all were favorably impressed with the results, Henkel said. Air Force photo interpreters assigned to the test program were also impressed by high-resolution imagery obtained with the system, he said.

The test program consisted of 12 flights in July and August at Edwards and six additional flights there in September, after a brief return of the aircraft to Fort Worth for configuration changes. In the first group of flights, the pod's Sperry data link was used to transmit imagery obtained with two sensors over distances up to 170 miles. The pod's forward sensor is a turret-mounted, multi-position Chicago Aerial KS-153 fitted with a three-inch tri-lens and electro-optical image receptor. Vertical and side-view imagery are obtained with a Texas Instruments RS710 infrared line scanner for day/night operation.

To evaluate sensor performance in long focal length, stand-off operations (not flying directly over the target), a third sensor was installed in the pod without data link capability for the final six flights. This sensor is an electro-



F-16D Equipped with a Fort Worth-Built Reconnaissance Pod

optical Chicago Aerial KS-153 fitted with a 24-inch auto-focus lens for side and vertical surveillance.

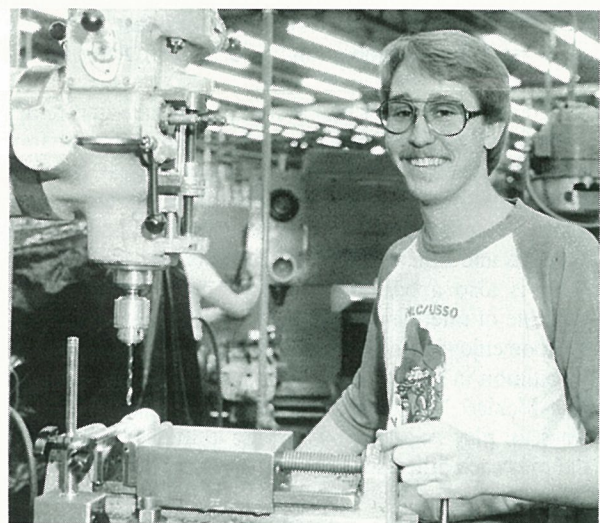
The aircraft, USAF F-16D No. 24, was the first of any F-16C or D models to carry the pod when it flew in the recce configuration for the first time in June. Test pilots reported that the aircraft handled well when carrying the pod in high-g maneuvers and on 600-knot runs without afterburner performed at altitudes as low as 200 feet. This confirms that the pod design meets weight, drag and turbulence criteria, while displaying high strength, Henkel said.

The pod incorporates three video recorders: one for

imagery storage, one for in-flight editing and one for backup. A video management console in the aircraft's aft cockpit allows imagery to be viewed and edited by a reconnaissance operator prior to data link transmission of selected frames.

An extendable antenna on the underside of the pod is used in downlinking imagery from aircraft locations in line-of-sight with the ground station.

The development and test program was conducted using USAF and industry funding under the Advanced Tactical Reconnaissance System program.



Skilled Worker. Gary Sawyer, 18-year-old tool-and-die maker at Pomona, placed second in the post-secondary machining category of the U.S. Skill Olympics held in Phoenix, Ariz. The competition is sponsored by the Vocational Industrial Clubs of America (VICA). Since the first-place winner is not eligible for International competition because of an age limitation, Sawyer will be competing for a place on the 1988 U.S. team to be entered in the International Youth Skill Olympics in Sydney, Australia. The U.S. trials will take place in October in Ohio.

Engineer's Shield Protects Tank Test Drivers

A Land Systems engineer has designed a protective shield for test drivers of M1A1 tanks that protects them from birds.

The number of sea gulls nesting in the infield of the test track at the Detroit Arsenal Tank Plant has increased over the years until this summer when they threatened the safety of the test drivers.

Because the birds have become accustomed to the test track activities and because of their numbers, collisions between birds and tanks presented a serious safety hazard to the drivers who were driving with the hatch open to obtain greater visibility.

George Ninko, Gage Processing, has solved this problem by designing a driver's shield and deflector that can be quickly installed and removed from the driver's opening by using two handtightened fasteners. The shield is made of high impact polycarbon, the same material used to protect fans at hockey rinks.

The shield protects the driver from sea gulls and serves as additional protection from bees and other insects and from stones and debris that can fly up from the track.

"George's shield has already prevented several probable injuries to both Land Systems and government employees," said Donald J. Verstraete, General Foreman, M1 Inspection Test and Adjust.



Safety Measure. A protective shield designed by George Ninko (right), Land Systems Gage Processing, draws approval from test drivers like William Cluney, Government Quality Assurance, who now can drive with the hatch open without fear of collision with one of the sea gulls nesting at the Detroit Arsenal Tank Plant test track.

F-16C/D Aircraft Praised for High Maintainability and Reliability

Maj. Gen. Monroe T. Smith, Deputy Chief of Staff for Product Assurance and Acquisition Logistics of the U.S. Air Force Systems Command, called the F-16 program "a success story" and praised the high maintainability and reliability of F-16C/D aircraft in a speech at Fort Worth recently.

General Smith said his office conducted an extensive study of the production and operational history of 20 representative F-16C/D aircraft after Gen. Lawrence A. Skantze, Commander of the Air Force Systems Command, asked him to verify that quality was not being sacrificed to stay ahead of delivery schedules in the F-16 program.

Speaking before the Fort Worth Chapter of the National Management Association, General Smith said: "I put together a team to see . . . if what we were seeing on the factory floor has anything to do with good or bad aircraft in the field," he explained. "We came in your plant, we took a look at what you're looking at, and we think that . . . you have a super system here."

General Smith said the study was completely objective:

"I wanted everybody to know we were going to tell it like we found it." Personnel from his office visited "the makers, the buyers, the supporters and the users," he said.

In the factory arena, the study showed that Fort Worth was averaging 39 cents per labor hour for scrap, rework and repair in F-16C/D production, compared to an aerospace industry average of \$1.26 per labor hour, he said. Some measures of factory efficiency reflected the leveling-off effects of increased production rates and model changes being introduced, but overall trends were still better than the average for the industry, according to General Smith. He said the study findings indicate that F-16 production success has resulted from careful planning throughout the program.

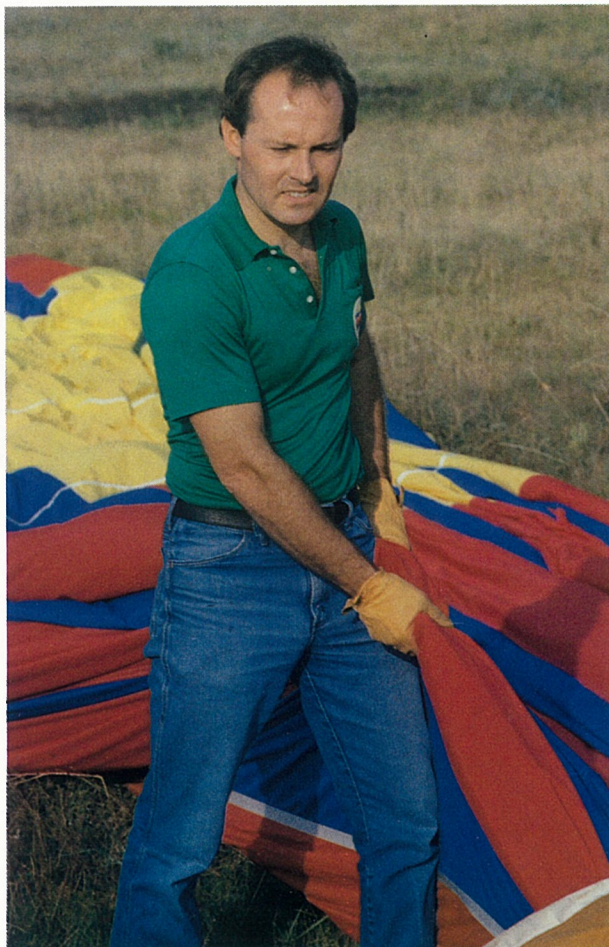
The 20 aircraft were tracked from the factory to their using command, the 363rd Tactical Fighter Wing at Shaw AFB, S.C. Operational records for the aircraft showed outstanding performance in such measurements as maintenance man-hours per flight hour, mission abort rate, mission returns in flight-ready status and mean-time between equipment failures.

To illustrate, he compared some of the measurements to those for older jet aircraft, such as the F-86, which he serviced as a maintenance technician early in his Air Force career. "Back when I was a crew chief, we had radios that got about 25 hours mean-time between failures. Today, we have radios that get 1,200 to 1,500 hours, as a fleet, between maintenance actions."

Radar systems used to get one flight between maintenance actions, while the F-16 radar can function 75 to 80 hours between maintenance actions, he said.

The reliability and maintainability of F-16C/D aircraft is proving to be twice as good as required by contract, said General Smith. He noted that F-16C/D aircraft can be flown as many as six hours in several flights without requiring maintenance, compared to an average of one flight-hour between maintenance actions on early jet aircraft.

"These are super, super statistics for a recently fielded aircraft . . . we haven't fielded one like that in my 35 years (in the U.S. Air Force)," he said.



Quiet Flight. Fort Worth employee Michael Moon goes regularly on a serene flight at sunrise as a hot air balloon enthusiast. At left, Moon prepares his own balloon for a flight. At right, hot air balloons begin their flight at the Snowmass Balloon Festival in Colorado, one of several flying events in which Moon has participated this year. Moon took the photo from the balloon he was flying.

Oldest Form of Manned Flight Is Modern Adventure for Michael Moon

Fort Worth employee Michael L. Moon has found a way to do community service and participate in his favorite hobby, hot air ballooning, at the same time.

For the last four years, Moon has served as balloon master at the Cowtown Balloon Round-Up, an annual event which benefits a local children's hospital. Moon directs all operations of the three-day event and is responsible for briefing participating balloonists on safety rules, among other tasks.

In the 1986 event, which was held recently, more than 30 balloons and balloonists participated in recreational flying and races. Funds raised from the event were donated to the Auxiliary of Cook/Fort Worth Children's Medical Center, the sponsoring organization.

Moon is president of the North Texas Ballooning Association, a 200-member organization of ballooning enthusiasts from Fort Worth, Dallas and other nearby cities. He has been flying balloons for almost 10 years. "After my first ride, I was hooked," he said.

He has been with General Dynamics nine years and is presently an engineering specialist in the F-16 Technology Modernization Program Office, where he handles project planning and contracts. He and his wife, Debbie, have a two-year-old daughter.

For Moon, the perfect Saturday begins before dawn. He gathers his ballooning gear and heads for the countryside with two or three companions who will either be his ground crew or fly with him.

If all goes well, the sunrise will be followed within minutes by the ascension of Moon's green, yellow and orange balloon, "Moonbeam," as it carries him and one or two passengers aloft. As wind currents start the balloon on its one-to-two-hour flight, a ground assistant will leave the launch site in a pickup truck and attempt to chase the aircraft as it floats 10 to 15 miles. The assistant's job is to retrieve the balloon and its occupants upon touchdown.

There is no way to steer a balloon or predict a landing site, but pilots can control the general direction of travel by changing altitude, since winds at different altitudes blow in different directions.

A propane burner mounted above the basket can be turned on or off by the pilot to increase altitude or maintain level flight. To descend, the pilot releases some of the hot air by opening a valve in the envelope. "There's quite a workload for the pilot," Moon explained. "Still, ballooning is a totally different sensation of flying. When you're not using the burner, it's quiet and serene. It's very picturesque."

Moon said he enjoys ballooning because it is a sport and mode of transportation that brings its participants close to the weather elements. Ballooning depends on the properties of wind, much like sailing. "I also like the camaraderie with other balloonists," he added. "If I'm not flying, I like to drive the chase vehicle."

After morning flights, pilots and crew members usually meet to discuss their experiences over breakfast. "There's a lot of tradition in ballooning," said Moon. "After all, it's the oldest form of manned flight."

Moon holds a pilot's license for lighter-than-air aircraft, as required by the FAA. He usually flies three or four times a month, when weather permits. "Most flying is done in the morning because that's when the air is most stable. Later in the day, the sun heats up the air and causes thermals and other undesirable currents," he said.

He is also a balloon instructor pilot and a strong advocate of safety in ballooning.

Moon enjoys flying with other balloonists and has flown his balloon in several mass flight events in Colorado and New Mexico. "We have navigational contests, and sometimes we play leap frog by varying altitudes to go under and over each other, separated by great distances," he said. "It's all fun."

Convair's Goodwin Trains Employees on How to Avoid Being Shocking

Convair's Mary Kay Goodwin, a quality engineer, is an expert on electrostatic discharge (ESD), and anyone who has received an ESD shock knows that the matter is worthy of attention.

Probably everyone has received a minor shock from an electrostatic discharge, possibly from walking across a carpet during dry weather and then touching a light switch.

But in the manufacturing of delicate parts, while the person will be all right, there could be damage to the switch.

Goodwin explained that "At home, ESD may only be a nuisance, but when 100 percent reliability is demanded of our manufactured components, ESD can cause catastrophic problems in the workplace."

"For example," she said, "it takes about 3,500 volts to feel ESD in the form of a shock; and 5,000 volts will produce a spark. But less than 500 volts — not enough to be detected by normal human senses — can damage almost any subcomponent in use today."

"Once you start relating ESD to things that happen at home," Goodwin said, "people begin to realize what can happen to complex electronic components and systems, especially when you look at the number of people involved in the handling, transporting, assembly and inspection of components."

Goodwin came to Convair as a numerical control program engineer in 1981 after completing the coursework required for a doctorate in industrial art and technology at the University of Northern Colorado. She soon became involved in a program at Convair to increase the level of

ESD awareness among employees.

Her first assignment was to develop a curriculum to use as the basis for the technical training department's outreach to all Convair departments handling electronic components, from receiving to shipping.

"I found only a handful of research," she said, "and most of it was the technical kind — what effects ESD had on specific types of components — but I learned from a survey that most people were concerned about the human side — the attitudes toward the ESD problem and how to improve awareness in the workplace."

From Goodwin's research, the Convair awareness program took shape, along with the topic for her doctoral dissertation. She developed a simplified curriculum for the Convair ESD training program, but her dissertation expanded on that to include comprehensive course content for all industrial settings.

Goodwin recently completed the dissertation on ESD training courses content and methodology and has earned her degree.

Today, more than 5,000 people at Convair and Space Systems divisions have received ESD training, and the program has also been presented to suppliers.

Goodwin now is a group engineer in Procurement Quality Assurance, where she is responsible for monitoring the quality of vended electrical and mechanical parts. Continuing her interest in ESD-related issues, she serves on a committee that consults with colleges and universities on how to include ESD awareness in electrical engineering curricula.



Mary Kay Goodwin, Convair's Static Expert

Company's Job Center at Quincy Cited by National Alliance of Business

General Dynamics has received a 1986 Distinguished Performance Award from the National Alliance of Business for the company's successful development of the Job Placement and Emergency Assistance Center to aid dislocated employees of the Quincy Shipbuilding Division.

The award was presented to Gary S. Grimes, Vice President and Quincy General Manager, at the NAB's 18th Annual Conference and Exhibition Sept. 15th in Chicago.

The conference, "Job Training '86 — New Directions . . . New Ideas," was attended by more than 2,000 business and job training leaders from around the country,

including a number of General Dynamics officials. It was the largest national gathering on job training issues.

"The General Dynamics Job Placement and Emergency Assistance Center serves as a model of achievement in job training public/private partnerships," NAB President William H. Kolberg said. "It is one of 11 award winners chosen nationwide for their efforts in building new opportunities for productive employment for all Americans and is therefore cited as among the nation's best efforts at resolving structural employment."

In accepting the award, Grimes said:

"Sixteen months ago we established our Job Placement

and Emergency Assistance Center. It is a unique, cooperative partnership between business, government and labor, which has made a significant difference in obtaining new jobs for our laid off workers.

"In attempting to meet the complexities and personal needs associated with placing our employees, we have had the strong support, assistance and invaluable cooperation of the Commonwealth of Massachusetts. At every level and in every agency, they have worked tirelessly to assist laid off General Dynamics employees.

(Continued on Page 2)

GENERAL DYNAMICS

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Consultants Preparing Survey Presentations

The administration of General Dynamics' first Corporatewide Survey of Employees was completed on Oct. 3rd. According to David Sirota of consultants Sirota & Alper, "more than 60,000 completed surveys have already been read by the computers, and the statistical analysis has begun. Employees' written comments are being read and processed at our New York office for inclusion in the formal reports."

Formal presentations to corporate and division management and union leaders will begin in late November and continue through mid-December. While these processes are under way, a team of division and corporate personnel is working on the design of the formal feedback publication, which will provide corporatewide results to all employees.

Fort Worth Awarded Multiyear Contract For 720 F-16C/Ds

Fort Worth was recently awarded a second major multi-year contract for continued production of the F-16C/D Fighting Falcon.

The four-year, \$4.268-billion contract calls for 720 of the advanced, evolutionary aircraft to be manufactured between Fiscal Years 1986 through 1989. Final deliveries under the contract are scheduled to be made in May 1991.

"This is certainly a welcome step," said Herbert F. Rogers, Vice President and General Manager at Fort Worth. "It will assure efficient and cost-saving continuance of the F-16 production line into the next decade."

Lewon D. Simpson, Vice President-Material, added that the multiyear program (MYP) means that "planning, material requirements, lead times and manpower are all stabilized for at least five years to come. That's a nice backlog by any standard."

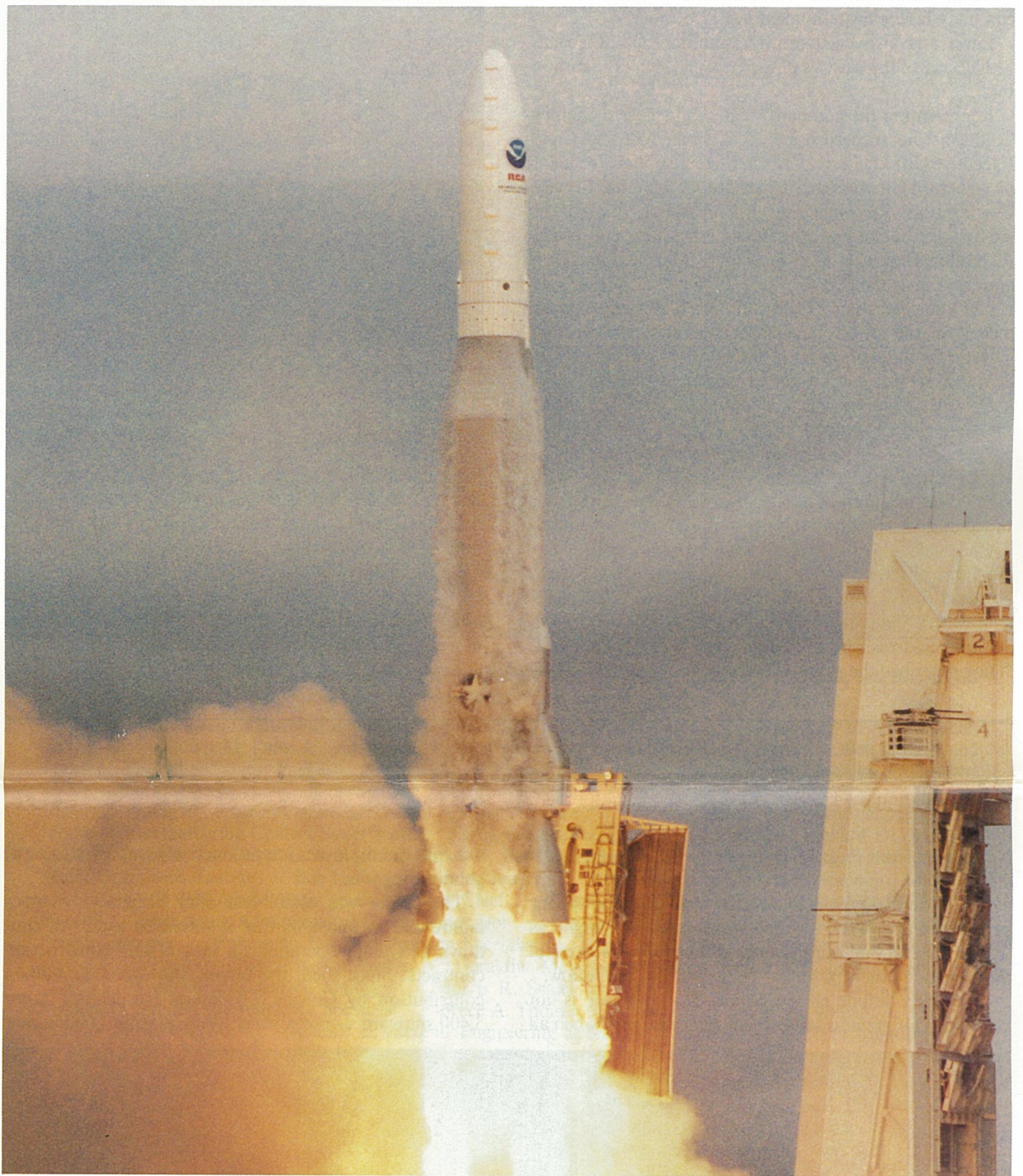
After the Sept. 15th announcement, an Air Force spokesman said the multiyear contract for 180 USAF F-16C/D aircraft annually would save taxpayers more than \$358 million over the four-year period.

Stanley C. Pace, Chairman of the Board and Chief Executive Officer, was in Fort Worth shortly after the contract was announced and referred to it in a speech he made to members of the National Management Association's local chapter.

"Herb (Rogers) and you teamed up and just brought home a four-and-a-quarter billion dollar multiyear contract," Pace said. "My most sincere congratulations to all of you for that . . ."

"Now, start working on MYP III," he added to the applause of more than 800 persons.

The latest contract, which provides for alternate mission equipment such as AIM-9 (missile) launchers and 300-gallon external fuel tanks, was actually authorized by Congress late in 1985 in a joint USAF/General Dynamics effort to hold down production costs and to assure the on-or-ahead-of-schedule deliveries that have characterized the F-16 program since its beginning.



Atlas 52E Successfully Launches Weather Satellite at Vandenberg AFB, Calif. on Sept. 17th.

Record Crowd Watches Atlas 52E Launch NOAA Weather Satellite from Vandenberg AFB, Calif.

A General Dynamics Atlas successfully launched a National Oceanic and Atmospheric Administration satellite from Vandenberg AFB, Calif., Sept. 17th before an unprecedented crowd of observers, including the largest number of reporters to attend a launch from the Air Force base in more than 20 years.

Atlas 52E blasted off precisely at the scheduled time of 8:52 a.m. and performed flawlessly as it boosted the TIROS/NOAA-G weather satellite into a 518-mile, near-polar orbit.

On the pad, the Atlas, originally produced in San Diego by the company's Space Systems Division, stood 95 feet tall and carried nearly 30,000 gallons of propellant.

This launch marked the 487th of an Atlas and the second success in two Atlas launches in 1986. Attention had been focused on this event because of the U.S. space program failures in 1986.

At a pre-lift-off news conference, Charles R. Harter, Manager of General Dynamics base operations at Vandenberg, said, "We have a good booster, and we're ready for a successful launch."

Atlas did not disappoint as it proceeded through a smooth, uninterrupted countdown and lifted off with a roar to the cheers and applause of the people watching from industry, government and local communities.

Originally built as an intercontinental ballistic missile, Atlas 52E had been stationed at Warren AFB, Wyo., after

delivery to the U.S. Air Force in 1961. It was decommissioned, along with the rest of the Atlas ICBM fleet, in late 1964 and stored at Norton AFB, Calif.

In 1981, it was brought to the Western Test Range facility of Space Systems to be refurbished and modified as a space launch vehicle for the Air Force.

The NOAA-G spacecraft became NOAA-10 as soon as it reached stable orbit, approximately 30 minutes after lift-off from Space Launch Complex-3.

NOAA-10 and its partner NOAA-9 are part of a low-earth orbiting series of satellites to provide systematic global weather observations.

NOAA-10 will collect meteorological data and transmit it directly to users around the world to enhance local weather analysis and forecasting including hurricane tracking and warning.

The payload also carried instrumentation to provide additional worldwide monitoring of search and rescue beacons placed on aircraft and ships. This is carried out through the SARSAT program, a joint international effort among the U.S., Canada, France and the Soviet Union that has saved more than 600 lives since its inception in 1982.

This was the seventh TIROS/NOAA launch in a series of 11 scheduled on Atlas E vehicles.

(See related stories on Pages 4 and 5)

David S. Lewis Honored by Company with Endowment to Georgia Tech

David S. Lewis, former Chairman and Chief Executive Officer of General Dynamics, has been honored by the company with a \$1 million endowment to the Georgia Institute of Technology to establish the David S. Lewis Chair in Aerospace Engineering.

The gift to Georgia Tech's School of Aerospace Engineering will provide, in perpetuity, salary, benefits and basic support services for a senior professor.

The chair is named in honor of Lewis, a 1939 aeronautical engineering graduate of Georgia Tech, for his leadership at General Dynamics, for his commitment to technical excellence and for his contributions to the advancement of aerospace technology. Lewis served for 15 years as Chairman and Chief Executive Officer of the company before his retirement last December.

Lewis and his wife, Dorothy, were honored at a Sept. 12th dinner of the trustees of the Georgia Tech Foundation Inc.

Representing the company at the dinner were Stanley C. Pace, who succeeded Lewis as Chairman and Chief Executive Officer; Lester Crown, Executive Vice President of General Dynamics and Chairman of Material Service Corporation; President Oliver C. Boileau; Richard E. Adams, Executive Vice President - Aerospace; and James R. Mellor, Executive Vice President - Marine, Land Systems and International.

"An endowed chair," Pace said, "is a highly appropriate means for the Directors, shareholders and employees of General Dynamics to honor Dave and, at the same time, demonstrate our commitment to strengthening engineering, scientific and technical education, which is so vital to the well-being of our country."

"There is a long history of warm and productive relations between Georgia Tech and General Dynamics," Pace said. "This has been developed and maintained by Dave, based upon his love for both the company and the school."

Pace said that General Dynamics over the years has been one of the major employers of Georgia Tech graduates and that Georgia Tech is one of the top 10 schools from which General Dynamics recruits.

"In an address here at Georgia Tech in 1976," Pace said, "Dave described the absolute necessity for higher education



Lewis Honored. David S. Lewis, former Chairman of General Dynamics, has been honored with the establishment by the company of the David S. Lewis Chair in Aerospace Engineering at the Georgia Institute of Technology. Shown above at a dinner at the university honoring Lewis are (left to right) Dr. Henry C. Bourne Jr., Acting President of Georgia Tech; Lewis' wife Dorothy; Lewis; and Chairman Stanley C. Pace.

to be advanced and strengthened by the corporate community that depends so much upon its graduates.

"Dave's belief in, and accomplishments of, excellence have been recognized worldwide; he is one of the giants in the post-World War II aerospace industry."

Pace said that Lewis has received far too many high honors for him to list and that "Tonight we add one more . . . We endow this chair in his name."

Lewis has been involved in Georgia Tech affairs

throughout his life. He has supported the Alumni Roll Call for many years as a member of the Thousand Club. In 1984, he became a member of the Endowment Council. He is a trustee of the Georgia Tech Foundation Inc. and a former member and past President of the National Advisory Board. Lewis is also a past President and Director of McDonnell Douglas and serves as a Director of the Ralston Purina Co., BankAmerica Corp. and General Dynamics.

Company's Job Center at Quincy Cited by National Alliance of Business

(Continued from Page 1)

"At General Dynamics we care what happens to our people. We appreciate the recognition given us tonight, as we are hopeful that our program will provide a successful model which others in similar circumstances can follow."

"However, despite our success to date, our task is not yet done. Our greatest satisfaction will come only when all

our former employees are productively employed in new, good paying jobs."

The center was established after General Dynamics announced in mid-1985 that it would be forced to shut down its Quincy operation for lack of ship construction contracts. Since then, the center, through a \$2 million contribution by General Dynamics, has assisted some 3,400 shipyard workers, successfully placing 1,600 in new

jobs, including 265 now working at other company locations. Another 600 who took advantage of the center's services have been enrolled in training programs.

At its peak, the center listed some 15,000 openings available with 2,000 other employers and offered idled workers a broad range of services which included job matching, placement counselling, job search workshops, retraining referral, toll-free WATS lines and free typing, reproduction and mailing of resumes.

Patricia Hanratty, Director of the Massachusetts Industrial Services Program, said that the \$2 million commitment from General Dynamics "represents the largest contribution from a company we've ever seen. In fact, it's considerably more than that when you consider their in-kind services."

Out of 217 nominations it received this year, the NAB recognized 11 organizations and individuals who have made significant contributions to job training partnerships — in the areas of dislocated workers, youth, employment/economic development, rural job training programs, state leadership, service delivery area, training for a targeted population and outstanding company of the year.

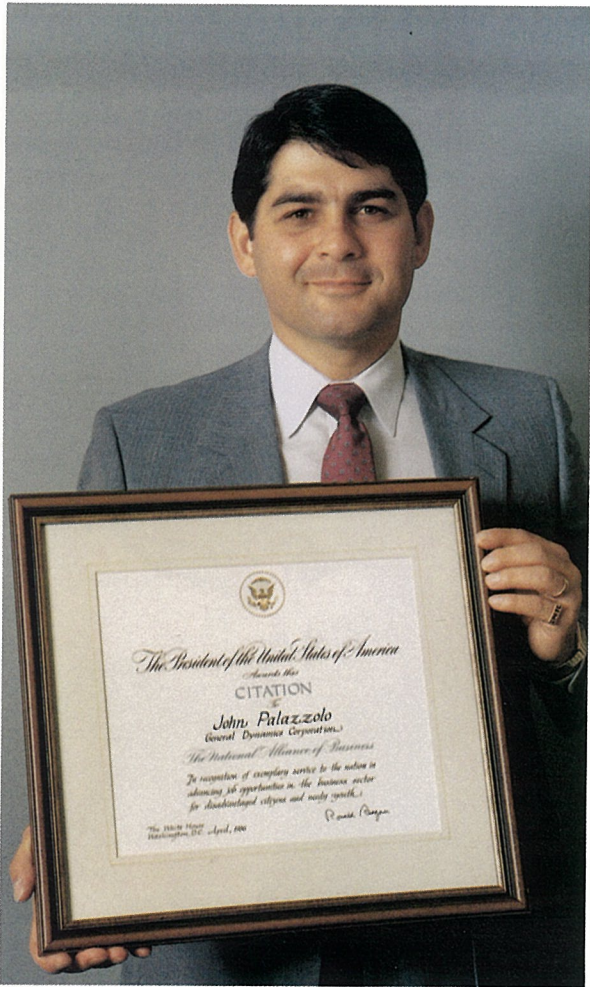
The 1986 Distinguished Performance Awards were initially reviewed by a team of job training experts on the NAB staff. Final judging was conducted by the following members of the NAB's Board of Directors: Richard F. Schubert, President of the American Red Cross and former President of Bethlehem Steel Corporation; Lloyd N. Hand, Senior Partner, Verner, Kiefert, Bernhard, McPherson & Hand, former Vice President and Assistant to the Chairman of TRW and a past President of the NAB; and Malcom R. Lovell, Jr., Executive-in-Residence, George Washington University, School of Government and Business Administration, and former Assistant Secretary, U.S. Department of Labor from 1970-1973.

In the past four years, the NAB's Distinguished Performance Awards, the only national awards program of its kind, have brought public and professional recognition to more than 45 individuals and organizations who are the backbone of job training partnerships in more than 600 communities in every state in the nation.

The NAB is an independent, business-led, non-profit corporation whose mission is to increase private sector training and job opportunities for the nation's economically disadvantaged and long-term unemployed people by building public/private partnerships of business, government, labor, education and community groups.



Company Honored. General Dynamics has received a Distinguished Performance Award from the National Alliance of Business for its development of the Job Placement and Emergency Assistance Center at Quincy Shipbuilding. Gary S. Grimes, Vice President and Quincy General Manager (center), accepted the award at the alliance's annual conference in Chicago recently. Shown with Grimes are William H. Kolberg, President of the alliance (left), and Roger Semerad, Assistant Secretary of Labor for Employment and Training for the U.S. Labor Department.



John Palazzolo and His Presidential Citation

J. Palazzolo Honored For Work with NAB As Loaned Executive

John Palazzolo, Corporate Manager in Employee Benefits at the Corporate Office, has received a presidential citation for his work during 1985-86 as a loaned executive to the National Alliance of Business.

The citation, signed by President Ronald Reagan, recognizes Palazzolo for "Exemplary service . . . in advancing job opportunities in the business sector for disadvantaged citizens and needy youth."

Palazzolo was assigned to the NAB's Central States regional office in Dallas from April 1985 through March 1986. During that time he worked with representatives of 38 companies in a nine-state area in promoting employment and training programs for the jobless and unskilled under the Job Training Partnership Act (JTPA) of 1982.

Palazzolo calls his assignment in working with the "CEO Representative" business team "a real eye-opener."

"I was totally unprepared for the complete commitment and the depth of involvement that private industry gives to this program," he said. "Nearly half of the companies with which I worked were represented by someone at the vice presidential level — and there was never any question about the company backing its man 100 percent."

Palazzolo said that the government's willingness to let private industry, as the end-user, help to shape training programs has paid big dividends.

"The flexibility of the JTPA means that business can customize its training programs to suit that particular company's needs while also building in favorable promotional opportunities," he said.

In one instance, Palazzolo said, a number of displaced aerospace workers were retrained in composites technology and placed in new positions. In another case, a Texas convenience store chain initiated customized training based on a study that showed a nucleus of inner city economically disadvantaged "who wanted to work, who were willing to learn and who stayed on the job," he said.

Palazzolo's salary and all of his expenses during his year as a loaned executive were paid by General Dynamics, which has been a strong corporate sponsor of the National Alliance of Business since its founding in 1968.

Corporatewide U.S. Savings Bonds Campaign Sets a Record for the Second Year in a Row

General Dynamics' corporatwide U.S. Savings Bonds campaign has been completed with a second consecutive record breaking performance.

In the 1986 campaign, a record 78,189 employees participated in the bond program. This is 77.5 percent of the company's total employees and is an increase of 1.5 percent over the previous record in 1985.

The Corporate Office and eight of the company's 16 divisions and subsidiaries reported more than 90 percent employee participation this year.

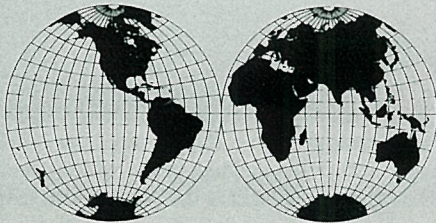
Also in 1986, 19,536 employees became new savers, and 19,195 employees increased their savings bond allotments.

The Corporate Office in the 1986 campaign led the divisions with a 100 percent employee participation. It was followed closely by Fort Worth, with 99.8 percent participation.

Other divisions and subsidiaries and their participation percentages are: Space Systems, 96.8; DatagraphiX 94.5; Cessna and Convair, both at 93.7; Data Systems, 92.3; Pomona, 91.9; and Valley Systems, 91.6.

A preliminary report by the Savings Bond Division of the U.S. Department of the Treasury shows that General Dynamics has moved up from eighth in 1985 to seventh in 1986 among companies nationwide in the percentages of

total employee participation.	
The top 21 companies in the country are:	
1. E-Systems, Inc.	99%
2. The Boeing Co.	95%
3. BellSouth Corp.	94%
4. Lockheed Corp.	93%
5. Martin-Marietta Corp.	85%
6. U.S. Department of Housing and Urban Development	80%
7. GENERAL DYNAMICS	78%
8. Tennessee Valley Authority	74%
9. Northrop Corp.	73%
10. Rohr Industries, Inc.	71%
11. RCA Corp.	70%
12. Monsanto Co.	68%
13. Pacific Telesis Group	66%
14. Salt River Project	66%
15. U.S. West	66%
16. Honeywell, Inc.	64%
17. Centel Corp.	61%
18. U.S. Postal Service	59%
19. McDonnell Douglas Corp.	58%
20. American Information Technologies	57%
21. Rockwell International	57%



Around the World

CHQ: Robert G. Lawrence joined as Corporate Marketing Manager-Middle East . . . Robert G. Hill transferred from Land Systems and was appointed to Corporate Director-Logistics.

Fort Worth: Wayland Keith was appointed to Production Management Director . . . Frederick L. Ashabanner, Gary L. Bailey, Edwin M. Drass Jr. and Michael P. Martin were promoted to Purchasing Agent . . . Ben L. Bates and James M. Phillips to Project Engineer . . . James H. Blake and Bill A. Mulholland to General Foreman . . . Marsha M. Booth and Charles R. Spangenberg to Senior Industrial Engineer . . . Joseph A. Broesche to Procurement Chief . . . Joseph M. Busch to Senior Management Systems Analyst . . . David G. Collins, Linda F. Montenegro and Robert P. Moore to Manufacturing Control Supervisor . . . Larry V. Curtis to Logistics Specialist . . . Richard D. Delzell to Logistics Engineer . . . David L. Dutton and James W. Potts to Technical Group Supervisor . . . Frank E. Ely to Senior Operations Analyst . . . Bob L. Fry to Project Manager . . . Paul E. Garrison, Donald R. Mancuso, Woodrow M. Massey and William M. Ross to Engineering Chief . . . Gilbert K. Gravitt to Superintendent . . . Rickey D. Harwell to Engineering Administrative Group Supervisor . . . Curtis E. Holliday and Paul L. Scofield to Assistant Project Engineer . . . Patrick E. Jacob to Program Specialist . . . Kerry E. Maxwell to Field Service Engineer . . . Dottie S. Maynard to Senior Program Analyst . . . Geraldine McDonald to Senior Engineering Change Analyst . . . Willis A. Pierson to Engineering Manager . . . Morris R. Scales to Engineering Development Administrator . . . Michael W. Schmitt to Production Specialist . . . Bruce A. Thomas to Project Coordinator . . . William A. Token to Principal Field Engineer . . . Michael J. Vaczi to Engineering Specialist . . . Randy W. Webb to Manufacturing Engineering Specialist . . . Darrell L. Williams to Program Administrator.

Electronics: Mark E. Frazier was appointed to Quality Assurance Director . . . Joseph H. McBeth to Artificial Intelligence Center Director . . . Thomas W. Morris was promoted to Project Manager . . . Robert L. Pickett to Senior Material Specialist . . . Dewey Thomas Jr. to Senior Project Manager . . . Greg Eltringham, Thomas E. Krasinski, Royce D. Moke and Alex Menchion III to Test Engineer . . . Cuong S. Nguyen to Associate Manufacturing Engineer . . . Norma M. Reddick to Senior Operations Representative . . . Gary D. Overstreet to Senior Planning Control Analyst . . . Veronica M. Kops to Subcontract Administrator.

Electric Boat: Peter Halvordson was promoted to Production Control Manager . . . Michael Alu to Ship Manager . . . Timothy Kennedy to Production Methods Chief . . . Charles McAdams to Assistant Chief Refueling Engineer . . . Chester Wolik to Shift Superintendent . . . Wilfred Vars to Superintendent . . . James Stailing to Site Superintendent . . . Elaine Perry to General Foreman . . . James Winsor to Plant Protection Lieutenant . . . Douglas Bourque, Stephen Morrisette, Rudolph Sarpu and Richard Sipe to Group Trade Planner . . . Linda Larson to Attorney . . . Walter Algiers to Foreman-Laborer . . . Larry Crandall, John Dodge, John Elias, Daina Ely, Kevin Fagan, Edward Harper, Irvin Reid, Curran Sheppo and David Sorensen to Foreman . . . Angelo Luzzi and Martha Mather to Graphic Reproduction Supervisor . . . Robert Minnotte to Technical Services Supervisor . . . Bryan Schroeder to Design Services Supervisor . . . Arlene Anderson to Engineering Supervisor. At Quonset Point, Timothy Lacoss to General Foreman . . . Thomas Cournoyer to Foreman.

Convair: E. Fisher Coil was appointed to Medical Director . . . Robert E. Albright and Barry P. Long were promoted to Estimating Chief . . . Robert D. Beneventi to Manufacturing Operations General Supervisor . . . Richard E. Bowen to Manufacturing Operations Supervisor . . . Keith R. De Armond and Darrel L. Timm to Plant Services Operations Supervisor . . . Wayne H. Fink to Logistics Supervisor . . . Elizabeth H. Foster to Senior Financial Specialist . . . Markcos M. Garcia to Manufacturing Control Operations General Supervisor . . . Freeman S. Graham and Gerald E. Walters to Administrative Chief . . . Joseph C. Gunn, Santiago Sallave Jr. and John A. Schifano to Manufacturing Control Operations Supervisor . . . Kim L. Kovaleski and Donald H. Leonard to Finance Chief . . . Thomas Maslo to Product Support Chief . . . Benjamin J. Moreno to Master Scheduling Supervisor . . . Randall M. McPheeters and Stephen R. Woolley to Human Resources Manager . . . Jerry K. Williams to Human Resources Supervisor.

Space Systems: Roger A. Bujold was promoted to Quality Assurance Western Test Range (Vandenberg AFB) Chief . . . Anthony H. Christensen to Program Manager . . . Charles R. Elliott to Production Support Manager . . . Kenneth R. Krebs to Engineering Chief . . . Gerri L. Willis to Procurement Services Supervisor.

Land Systems: N. S. Sridharan was appointed to Structures and Design Director . . . Dewey E. Brown to Logistics & Support Director . . . James G. Knighton was promoted to Accounting Supervisor . . . Gerald F. Stark to Supplier Quality Assurance Specialist . . . James C. Sparks and Paul E. Zimmerman to Quality Assurance Engineering Specialist . . . Dean C. Roualet to Program Management Analyst . . . Murphy J. Allen Jr., Lillian L. Martin and Iris E. Williams to Material Planning Supervisor . . . Ronald E. Adamczyk to Material Control General Supervisor . . . Donald E. Dobney to Group Engineer . . . Karen L. Hunt to Logistics Engineering Specialist . . . Charles P. Roberts to Fabrication Manager . . . Carl R. Carless to Superintendent . . . David M. Berry to General Foreman . . . Joseph A. Evans to Senior Material Planning Analyst . . . Stuart L. Schwalm to Quality Assurance Manager . . . Gwendolyn Watson to Marketing Administration Specialist . . . Mary M. Portuesi to Tech Services Supervisor.

Data Systems: At Western Center, Ronald E. Schlemmer was promoted to Technical Services Chief . . . Dennis C. Frye to Software Design Specialist . . . Kit Nelson to Senior Software Engineer.

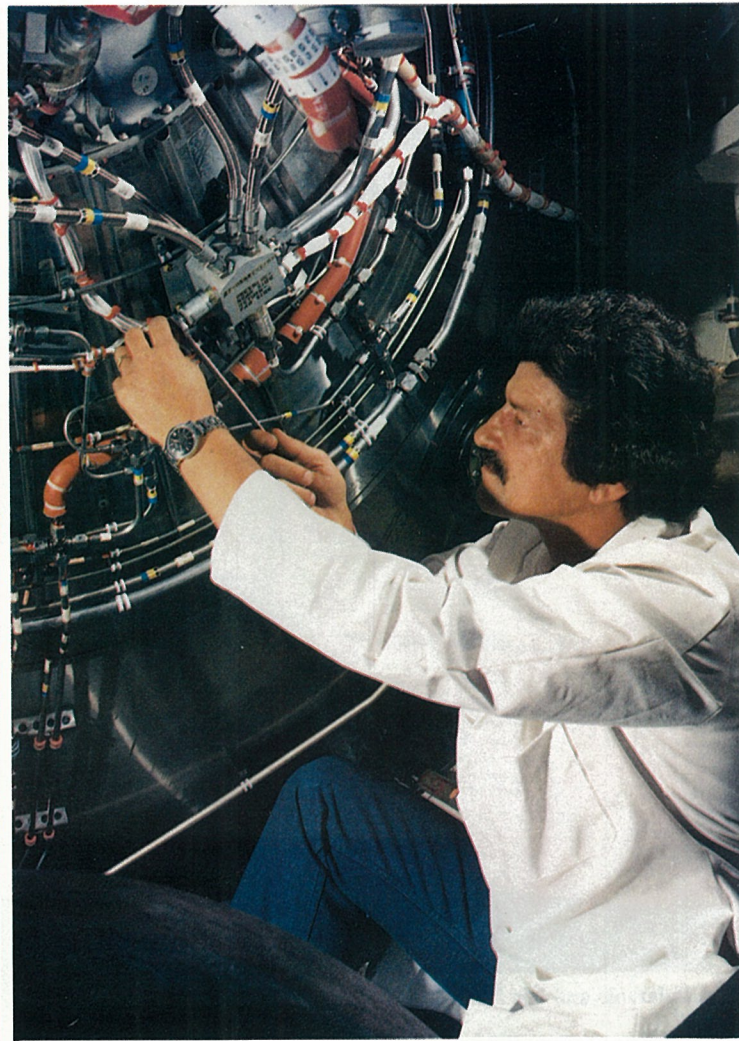
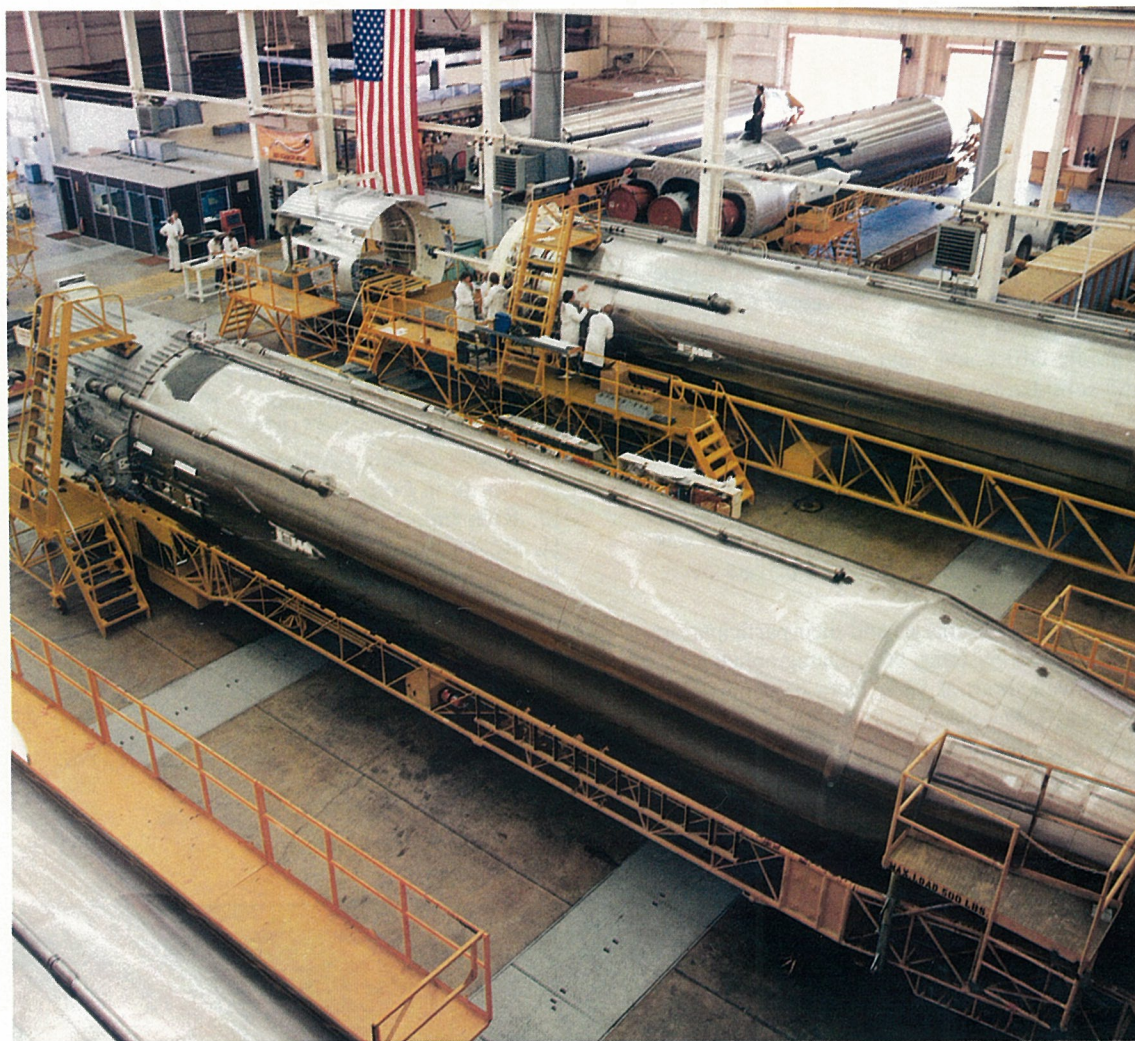
GENERAL DYNAMICS

World

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Atlas Transformation. It takes considerable work to transform a 25-year-old Atlas ICBM into a modern-day launch vehicle. This work takes place at the Space Systems Booster Assembly Building at Vandenberg AFB, Calif. The hangar area of the building (photo at left) houses several of the Atlases currently being modified to launch contemporary payloads. More than 200 employees are responsible for modifying, converting and launching the Atlases. One employee, John Bouse, Senior Launch Services Mechanic, is shown above (photo at right) checking out a pressurization line inside the Atlas engine compartment.

Company Crews Turn Old Atlases into Updated Launch Vehicles By Julie Andrews

To the 200 Space Systems Division employees who work on the Vandenberg Atlas Modification Program (VAMP) at the Western Test Range (WTR) in California, Atlas is not getting older — it's getting better.

Many news stories commented on the age of Atlas 52E after it successfully launched a weather satellite from Vandenberg Air Force Base on Sept. 17th because it was originally built more than 25 years ago.

By the time the VAMP team finishes its work, an aging, dusty piece of hardware is turned into a gleaming, newly reconfigured launch vehicle, capable of boosting scientific missions into space for the U.S. Air Force and NASA. This was the case with Atlas 52E.

VAMP work began in 1965 after Atlas was decommissioned as an intercontinental ballistic missile system. Atlas ICBMs had been deployed at Strategic Air Command bases throughout the United States during the early sixties. Rather than scrap the missiles, the Air Force put 141 of them into storage at Norton AFB in California, and General Dynamics was awarded a contract to begin refurbishing 95 of them to be used as space launch vehicles.

Over the years, the savings to the Air Force attributable to the Atlas E/F modification program have been enormous. It is estimated that the cost of refurbishing an Atlas

is one-third that of building a new booster.

"The technology behind Atlas is still state-of-the-art," said Bill Phillipp, former Atlas Program Director now heading up the Medium Launch Vehicle competition effort for Space Systems.

Atlas was designed to be a huge, pressure-stabilized, stainless steel balloon, a concept that was considered revolutionary during its development.

"Some of the experts thought it wouldn't work," said Phillipp, "but Atlas went on to write space history for three decades."

The Atlas tank is the one thing that remains basically the same during modification. All other systems are new. When refurbishment activity begins, the VAMP crews first take the missile apart and clean it and inspect it, leaving a shell. Next, missile mechanics and technicians begin the painstaking reassembly procedure, using newly built harnesses and a multitude of other parts manufactured by Space Systems at Vandenberg and in San Diego. In all, more than 1,300 new parts are needed for each vehicle. Crews also check out and install the refurbished Rocketdyne engines.

Modification completed, the Atlas becomes the property

of the U.S. Air Force. When it is ready for launch, it is brought out to Space Launch Complex 3, where other members of the WTR team go to work preparing it for its mission. Here engineers and technicians check out all systems and resolve any electrical or mechanical problems they encounter.

As the launch date draws near, crews perform "dress rehearsals." The payload is encapsulated within the protective fairing, brought to the launch site, and mated with the Atlas one week before launch.

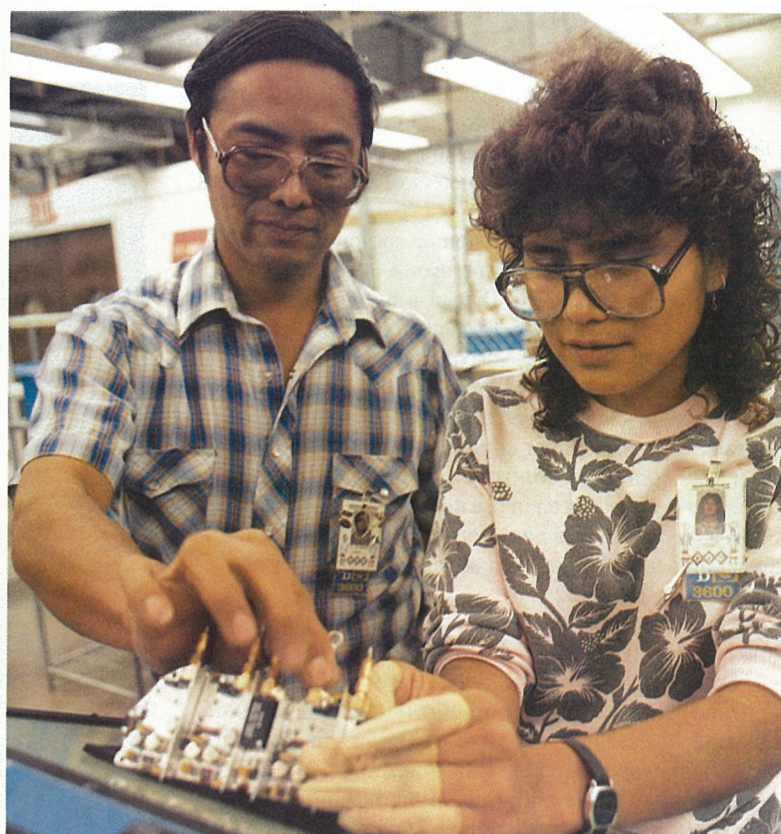
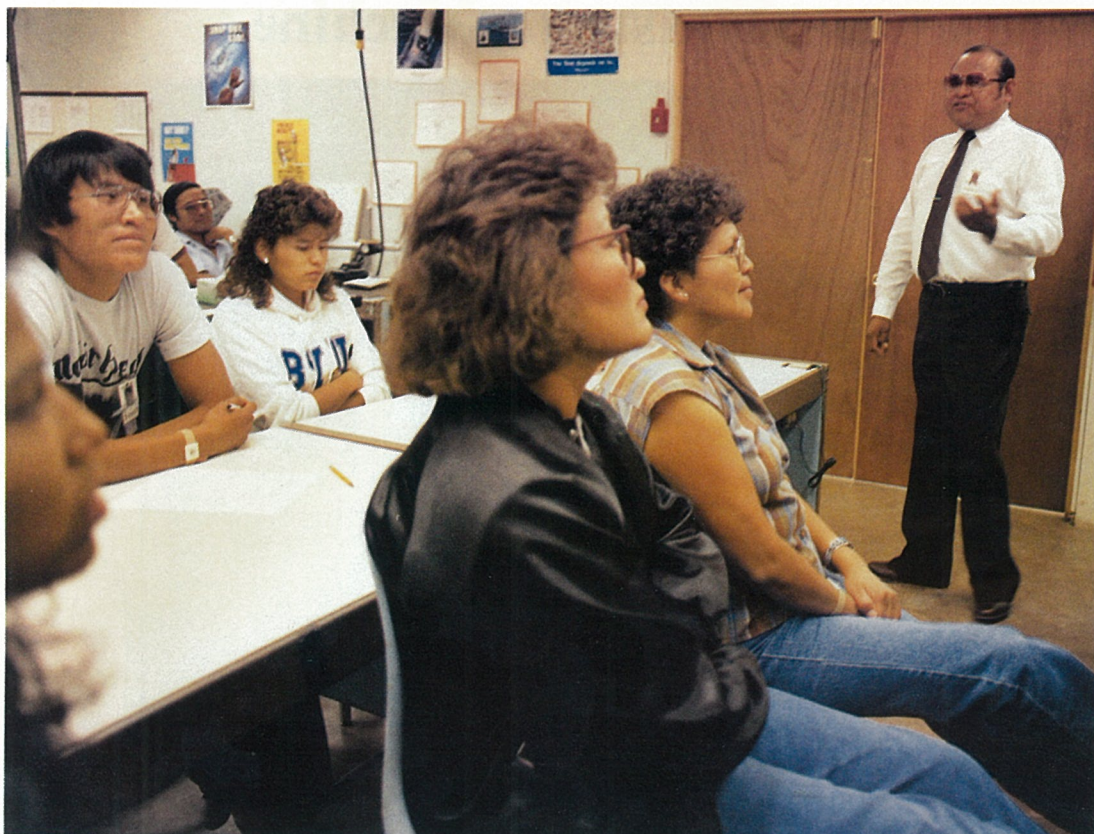
Five days before the launch, a series of readiness reviews take place. Actual countdown begins three hours before launch.

At 90 seconds, Dick Smith, Space Systems launch conductor, pushes the button to begin the launch sequence. The "10-9-8-7" count so familiar to the space age is recited by launch commentator Air Force Capt. Richard Sanford, and at zero all three of the main powerful Atlas engines ignite.

"Every Atlas that is launched from Vandenberg was actually built by the people who fly it," said Phillipp. "The launches never get easier, but afterward everyone shares in the elation that goes with a success."



Ready for Flight. The Vandenberg operation is like a completely self-contained division, with machinists, carpenters, welders, sheet metal workers, painters, plastic assemblers and dispatchers teaming up to get the converted Atlas ready for flight. Making sure that all vehicles are kept launch ready, launch service mechanics Gene Travis (left, in photo at left) and Paul Hedge drape the three main Atlas engines with protective covers. Counting down to lift-off, Dick Smith (at left, in photo at right), launch conductor, pushes the button to send Atlas 52E into action, while Tom Heter, Chief-Site Support, acts as assistant launch conductor in the facility's blockhouse.



Navajo Ethics. Ethics Awareness Workshops were conducted at Pomona's Navajo Facility in Fort Defiance, Ariz., during late September. (Left) Human Resources and Ethics Program Manager James Monroe conducts one of the workshops in the training room of the facility, which is currently the second largest employer in the Navajo Nation. (Right) Test Engineer Donald Thompson, who participated in a discussion on the Ethics Program, examines a Standard Missile circuit card with a member of his team, Electronic Tester Lucita Shirley.

Navajos Don't Need a Word for Ethics Because of Basic Honesty By George Salamon

Although there is no specific word for ethics in the Navajo language, Ethics Awareness Workshops were conducted and were well received last month at Pomona's Navajo Facility in Fort Defiance, Ariz. At the facility, more than 300 employees assemble circuit cards for the Standard Missile and Phalanx gun system and round wire harnesses for Standard Missile cables.

"There is a basic honesty in Navajo culture that creates an ethical attitude," said Michael Enfield, Director of the facility.

Anthropologists who have studied the culture and history of the largest Indian tribe in the United States agree. So do members of the Navajo Nation at the General Dynamics facility.

"The closest equivalent to ethics in Navajo is 'Dö hooyoshida,' which means 'do not be dishonest,'" said James Monroe, Human Resources Manager and Ethics Program Manager at the facility.

The Navajos make virtues of truth and honesty just as other groups do. There is a difference, however, in the reasons these ideals are advanced by Navajos.

Navajo culture rarely appeals to abstract morality. Acts are not judged as intrinsically "right" or "wrong," but are viewed in terms of their practical consequences. "Navajo culture does emphasize the practicality of getting along with relatives and neighbors as well as nature," said Monroe. "Any action by one member of a Navajo clan reflects on that group. The Navajo way is not to lie, cheat or steal. A Navajo is expected to remain loyal to this tradition."

But if loyalty to an unwritten tradition, handed down from one generation of Navajos to the next, is adequate

for face-to-face contacts within a peer group, can it cope with the complexities of business dealings which often transcend the immediate concrete situation in which two or several people interact?

"Navajo society is relatively simple; the business world of General Dynamics is complex," said Nathaniel Tso, an electronic tester. "There are two different sets of rules. I'm trying to learn the General Dynamics Standards of Business Conduct and Ethics and still keep my culture."

The difference in the rules lies more in the presentation than in their underlying values.

"Navajo tradition dictates that you do good for others, but that could bring you into conflict with the (General Dynamics) code," said Donald Thompson, a test engineer. "If someone here punches a time card for another employee, he is helping that person out, but he is also violating the rules. What you have is a conflict between an unwritten tradition and written regulations."

The employees at Fort Defiance have come to understand the two visions of "goodness" or "right" that affect the decisions in their daily business lives. And they discuss their individual and collective efforts to integrate them.

"I learned that the Ethics Program wouldn't hurt me," said Tso, "but that it would help me make decisions. I have become more efficient. I know that I have to make those decisions."

"Most of our people understand that the Ethics Program is based on Anglo society, but that it represents good business practices," said Monroe. "They are learning to separate and keep out of the workplace those traditional values that would go against these business practices."

"What I like about the Ethics Program is that it gives

you the guidance and principles to back you up," said Mattie Singer, a manufacturing supervisor. "In Navajo society, everything is still verbal. The standards are like a shield for me."

The traditional Navajo concept of "goodness" emphasizes productiveness, the ability to get along with others, helpfulness and generosity.

The Navajos do discuss their ethical principles, and their concern suggests the strong awareness that not everybody lives up to them.

Nor to the General Dynamics Standards.

"I had to terminate an employee for attendance violations," said Singer. "Once the company policies are explained to us, we get as firm on them as we are strong on the family and group loyalty in our own culture."

While many of the Navajo employees are working out ways to keep their personal loyalties from coming into conflict with workplace standards, others sense a gradual merging of the basic values inherent in both.

"Navajo culture has a long tradition of assimilating what we consider the good parts of other cultures," said Thompson. "We have absorbed things from Spanish, Pueblo and Anglo cultures. The majority here thinks the Ethics Program is a good thing. The collective environment will assure that the Program is successful. That's the old Navajo way. But individuals are also saying that each of us has to put his foot down when it comes to making decisions."

Monroe was pleased by the reaction to the Workshops.

"It wasn't just that most attendees told me they understand better what it's all about," he said. "Many added that they see how it relates to their personal lives."

Veteran Space Systems Employees Always Thrilled by Atlas Launches

Having the space program in your own backyard is what Space Systems' Ray Dailey calls "the bottom line reward."

Dailey and many of his coworkers who support the Atlas activity at the Western Test Range in California have been with the Atlas program since the beginning of the modification program, or even before, when missile testing first began at Vandenberg AFB back in the late 1950s.

Over the years they have seen many missile launches, but the veterans expressed the same thrill as a newcomer over the successful Atlas 52E launch on Sept. 17th.

Dailey, a 30-year General Dynamics employee, is a materials specialist who helps keep the flow of manufactured parts to the Atlas assembly area on time.

Millie Brockett, a quality control inspector who also has 30 years of experience with General Dynamics, inspects those same parts with as much care for a 25-cent diode as a more complex and costly electronic part. She first came to Vandenberg in 1959.

"The space business was all new to me then," she said, "but I've still got missile fever."

To Emmett Brown, who works on the reassembly of the Atlas vehicle, seeing it fly gives him a feeling of pride. He compared the attention to detail it takes to keep Atlas flying to working on exotic race cars, something he does in

his spare time.

"If something breaks on a race car, you're out of the race. It's the same with Atlas," he said.

Calibration Laboratory Supervisor George Mees saw the first Atlas launch from Vandenberg back in 1959 as he was driving to the base to look for work. "It was a beautiful sight!" he said.

Mees and others who started in the early days of Atlas testing can also remember launches that were not so beautiful. "Once I had to dive behind a building to escape flying debris," he said. Three decades later, systems once untried and untested are mature and reliable, but safety is always a concern.

"In the launch business, it's important to know what is safe and what is not," Mees said.

Ray Degn leads the mechanical test engineering group and has worked for General Dynamics for 27 years, 22 of those at Vandenberg. "I haven't seen a launch in 20 years!" he said. During launch Degn mans a console inside the blockhouse to monitor "redline" data.

On 52E, Degn and his colleagues worked long hours to solve the mechanical problems that caused several slips in the launch date. "All launches are a little different," he said, "but there was more pressure on this one."

Test Engineer Brian Lindgren also works at the launch site and he, too, has never seen a launch from outside the

blockhouse. "Inside you can feel the noise and vibration," he said.

With six years of experience, he is a newcomer to Space Systems. "Seven years ago I would never have thought I would be doing what I'm doing now," he said. "The excitement never wears off."

Howard De Boi and his Payload Integration group have mixed feelings about the central California coastal climate. "We sometimes fight the wind and fog," he said, as they mate the spacecraft to the Atlas booster once it is erected at the launch site. When they are not dealing with the elements, they work inside a cleanroom to encapsulate the spacecraft inside the fairing so that no environmental contamination remains inside.

Tomiko Miyamoto, an accounting technician, works back at the administrative area on budgets and travel arrangements for the many people who travel in and out of the base. She started her career 27 years ago in the early days of Atlas.

"Back then, we thought the Atlas contract would last three to five years," she said, "but it's still going strong."

She joined many of her coworkers outside the Space Systems building to watch the 52E launch on Sept. 17th, about 12 miles away. "No matter how many launches you've seen," she said, "the heart always beats faster."

Fort Worth Leads Industry with First Laser Measuring Machine

Fort Worth recently marked another first in the aerospace industry when the division's Quality Control group began using a measuring machine with a laser scanner probe to verify physical parameters of F-16 components without touching them.

The five-axis, three-dimensional, computer-controlled coordinate measuring machine uses a laser beam with a diameter about one-fourth that of a human hair, or five ten-thousandths of an inch, to check the precise tolerances required on such numerical-control machined parts as wing spars and fuselage bulkheads.

Since the machine can verify tolerances without making contact, it inspects large components many times faster than the computer controlled coordinate measuring machines that have been in use in the factory since early in the F-16 program, said Sam Young, Senior Quality Assurance Engineer, who has been in charge of the laser inspection project since 1982.

"For example, it takes the older machines, which use touch probe technology, 12 minutes to cover 81 linear inches on a part," he said. "The new laser technology machine can cover that distance in 11 seconds. The older machines were the latest state of the art in inspection technology when they were introduced here, but the new machine is like the seventh generation, by comparison."

The new machine was developed and manufactured by L. K. Tool Co., a subsidiary of Cincinnati Milacron, using specifications written by Fort Worth Quality Control engineers. Other aerospace firms are now researching their own applications of the Fort Worth-conceived technology, but the F-16 factory is the first to use a laser to inspect production parts, said Young.

The inspection probe on the machine is interchangeable, allowing it to also operate with a touch probe, if required.

A component to be inspected can be placed anywhere within a 100-inch by 68-inch by 30-inch area on the machine's table, because the part's preprogrammed mathematical coordinates, the part and the machine all work relative to each other, Young said.

"In other words, the machine can begin at any point on the component, with the component in any position on the machine, once the component's coordinates have been programmed into the computer controller," he said.

The probe head on the new machine can be manipulated into more than 700 different positions, compared to five



Laser Inspector. Machined parts inspector Charles Spradlin, left, uses control terminal to activate coordinate measuring machine's laser scanner probe while Quality Control engineer Pat Turner watches. The aluminum part being inspected is an F-16 wing spar. (The machine's laser beam is invisible.)

positions with the earlier machines. Another innovative feature, and one of the keys to the machine's high inspection speed, is the fact that the machine rests on air bags.

"The main moving part on the machine, the bridge, weighs about two-and-a-half tons," Young explained. "If the foundation of the machine were fixed to the floor, there would always be some extra movement when the bridge comes to a stop after relocating to position the probe. Therefore, the machine would have to pause to

align its coordinates again, resulting in a delay in the inspection process."

"With the machine sitting on air bags, this movement is absorbed and stability is maintained at all times, keeping the probe active," he said.

The machine's five air bags support approximately 13.5 tons of total weight, including the bridge and inspection table.

Savings and Stock Investment Plans			
Annual Rate of Return for the 12 Month Period Ending:			
Salaried	Aug. 1984	Aug. 1985	Aug. 1986
Government Bonds	9.1%	15.3%	14.2%
Diversified Portfolio	2.3%	23.8%	39.6%
Fixed Income	12.3%	12.4%	12.1%
Hourly			
Government Bonds	9.1%	15.4%	13.6%
Diversified Portfolio	1.7%	23.2%	40.4%
Fixed Income*	N/A	12.4%	12.1%
GD Stock Closing Price	\$64.50	\$77.75	\$75.00
* Fixed Income effective 6/30/85			
Annual Rate of Return for the 12 Month Period Ending:			
Salaried	July 1984	July 1985	July 1986
Government Bonds	8.4%	15.0%	14.0%
Diversified Portfolio	(8.3)%	36.7%	29.4%
Fixed Income	12.2%	12.4%	12.1%
Hourly			
Government Bonds	8.4%	15.1%	13.4%
Diversified Portfolio	(8.8)%	36.2%	29.5%
Fixed Income*	N/A	12.4%	12.1%
GD Stock Closing Price	\$53.00	\$76.00	\$70.50
* Fixed Income effective 6/30/85			

Land Systems Fencer Wins Epee Gold Medal

A Material Planning and Control analyst from the Land Systems Sterling Plant recently won a gold medal in the team fencing competition at the 1986 U.S. Olympic Sports Festival in Houston, Tex.

Christopher P. Young, who has established himself as one of the nation's top epee fencers, played on the East Team, one of four teams with five fencers each. He clinched the gold medal with his victory in the last bout of the tournament.

The U.S. Olympic Sports Festival is held every non-Olympic year and features the best amateur athletes in the United States.

Company College Recruiting Efforts Resulting In Record Figures for New Employee Hiring

Record setting performances have been achieved during the recent college recruiting year, according to Herbert L. Ellis Jr., Corporate Manager-College Relations.

Ellis said that 1,455 college graduates had started as of June 30th, with a projected year-end total of 2,444 — both corporate records. Ninety-five percent of them were graduated in the upper half of their classes, another corporate record.

"It is significant that we now have 676 employee/students in our Cooperative Education Program," Ellis said. This figure also is a record and is on its way to a year-end record of more than 1,000. The co-op program is an integral part of college recruiting since most of the students remain with the company after their graduation.

"Based on figures reported during the recent meeting of the College Placement Council, General Dynamics ranked among the top five employers of college graduates in the country this past year," Ellis said.

Achieving the record figures in 1986 involved campus recruiting visits to 128 schools and conducting 12,432 campus interviews.

"These major achievements in college recruiting have their roots in a centralized corporatewide program management approach to the company's college relations and recruiting programs," Ellis said. "Specific goals were identified and established as the heart of the program. Innovative recruiting methods and a corporatewide data reporting system have been implemented to help achieve these record goals."

Company officials serve as executive liaisons to enhance college relations while team captains and co-op captains are assigned program management responsibilities, includ-

ing budget management for specific schools. Many of these individuals are alumni of the schools with which they work.

Campus recruiters are required to go through intensive training to enhance their effectiveness on campus. In addition to a grueling schedule of 14 interviews a day, recruiters participate in career days, give speeches on campus and conduct information meetings. Improved recruiting productivity and cost containment has been achieved by divisions and subsidiaries working together in combining their recruiting activities. Responsible at each division for managing college relations and recruiting activities are employees designated as College Relations Administrators. Ellis said these key people are due much credit for the success of the program.

"Many elements are involved in our college relations and recruiting program," Ellis said, "and most important are the individual contributions, which cannot be overstated. Employees give freely of their time, effort and energies to the General Dynamics program."

Ellis said that hundreds of other employees are involved throughout the corporation reviewing employment application materials from thousands of students, determining suitable job assignments, coordinating in-plant interview visits, initiating and processing employment offer approval requests and signing up new employees reporting to work.

"The fall 1986 recruiting season has begun and promises to be one of the best ever," Ellis said. "Much effort has already been made and will continue to be expended in order to continue the record-breaking achievements in college recruiting."

TAC Weapons Meet Is Dominated by Fighting Falcons

The outstanding weapons delivery performance of Fort Worth-built F-16s was demonstrated once again at the U.S. Air Force Tactical Air Command's recent "Long Rifle" gunnery meet.

F-16 teams captured the top five positions out of 13 in the competition. A team representing the 58th Tactical Training Wing, Luke AFB, Ariz., finished first with 2,438

points. The 363rd Tactical Fighter Wing, Shaw AFB, S.C., came in second with 2,390 points. In third was the 388th TFW, Hill AFB, Utah, with 2,016 points.

Long Rifle is a new competition involving all active duty fighter wings in the 9th and 12th Air Forces. The first meet was held at England AFB, La.

Charles W. Pope Shares His Expertise on Sports with Area Youngsters

Fort Worth employee Charles W. Pope has experienced success on athletic fields many times in his life, but in recent years he has discovered that helping young people master sports skills can be just as exciting as driving a home run to center field with the bases loaded.

As a high school student, Pope was voted "best" in several sports, played on all-district teams and participated in state finals three years in track and field events. He played on a semiprofessional baseball team from 1957 to 1979, and he tried out for the major league Pittsburgh Pirates and Washington Senators (now the Texas Rangers) in 1961 and 1962. His semipro team once won a Texas state championship.

An 11-year General Dynamics employee, Pope is currently assigned as a quality control inspector in F-16 final assembly.

Pope has coached baseball, softball and football teams over the years and is well known by youngsters who live in his neighborhood as a source of pointers and tips.

"Sometimes I stop by the neighborhood baseball diamond on my way home from work, when kids are playing there," he explained. "I try to help as much as I can, and I enjoy it most when they find they are able to master something that they always thought they couldn't do."

Besides giving advice to budding athletes, Pope said he makes himself available to his younger neighbors for such favors as bicycle repair. "Being a friend to a young person gives you the opportunity to help put a better person into the world," he said.

He also teaches a Sunday class for young adults at the church he attends.

About two years ago, Pope was instrumental in organizing a neighborhood watch program that has been successful in curtailing residential burglaries in the area where he lives. "The first thing we did was set up meetings with



Giving Pointers. Fort Worth employee Charles Pope (left foreground) helps young people from his neighborhood perfect their batting skills. Over the years, Pope has coached baseball, softball and football teams.

block teams and captains," he said. "It's just another example of the good that comes from people working together, helping their fellow man."

When giving baseball and football pointers, Pope said

he tries to instill self-confidence in youngsters. "I love it when they surprise themselves by doing something well, then prove to themselves that it wasn't an accident — they can do it again," he said.

Space Systems Division Opens Support Office for Huntsville, Ala., Area

The Space Systems Division has opened a local program office to provide technical and administrative support for its activities in the Huntsville, Ala., area.

W. F. Rector III, Division Vice President for Program Development, said that George E. Philyaw has been named manager of the office, which will support various customer organizations in the area, including NASA's Marshall Space Flight Center, the U.S. Army Missile Command and the U.S. Army Strategic Defense Command.

"General Dynamics has a long association with the Marshall Space Flight Center and the U.S. Army commands," Rector said. "Activation of this office will provide the necessary technical presence to strengthen those rela-

tionships," he said. Space Systems is working on Marshall-related programs, such as space transportation architecture, orbital transfer vehicles and cryogenic storage technology. The division is also involved in Strategic Defense Initiative studies for the U.S. Army.

Philyaw rejoins General Dynamics after 23 years with United Technologies Corporation. Most recently, he was with the United Space Booster Division of UTC in Huntsville, where he was Project Manager for the Space Shuttle solid rocket booster components. He previously served with General Dynamics in the early 1960s as a test engineer for the Atlas launch vehicle at the Eastern Test Range.

Philyaw was graduated from Auburn University in 1957 with a Bachelor of Arts degree in Mechanical Engineering.

The Huntsville office is the second of four program offices planned by Space Systems. An office in Albuquerque, N.M., was activated in May. Others are planned for Houston, Texas, and Cocoa Beach, Fla.

Space Systems produces the Atlas and Atlas/Centaur launch vehicles. In addition, the division is developing advanced concepts for next-generation space transportation systems, spacecraft and a number of other advanced space technology programs including those related to the Strategic Defense Initiative.

Valley Systems Joins in Team Proposal for Pedestal Mounted Stinger

Valley Systems Division has teamed with Thomson-CSF's Electric Systems Division and Hughes Aircraft Company's Electro-Optical Data Systems Group to present a proposal on the Army's Pedestal Mounted Stinger

(PMS) Program. The Valley Systems Division is the prime contractor.

PMS is a component of the Army's Forward Area Air Defense program which will mount General Dynamics'

Stinger missile and an advanced fire control subsystem on the High Mobility Multipurpose Wheeled Vehicle chassis.

Valley Systems produces the Stinger missile system and has been involved with the integration of the Stinger missile on various platforms, such as the Air Force's Mobile Weapon System and the U.S. Army Missile Command's Multiple Stinger Launcher and Setter test beds.

Valley Systems also is the prime contractor for the U.S. Army Aviation Systems Command's Air-to-Air Stinger program now completing Full Scale Engineering Development.

Under terms of the teaming agreements, General Dynamics will serve as the systems integrator as well as the prime contractor. Hughes Aircraft will provide the electro-optical sensor suite and the laser ranger. Thomson-CSF will provide the turret assembly, control panel and other ancillary equipment.

The basic approach is an adaption of the Thomson-CSF developed Aspide system, now in low-rate initial production, and the General Dynamics/Hughes Aircraft Vulcan/Stinger Hybrid Program.

Thomson-CSF's Electric Systems Division, based in Paris, France, is a world leader in producing air defense systems. Thomson-CSF is responsible for logistical support and product improvements of the Hawk missile for NATO.

Additionally, Thomson-CSF produces the Shahine and Crotale radar directed surface-to-air missile systems. Both Thomson-CSF and General Dynamics have extensive backgrounds in developing and producing fully integrated air defense systems.

Hughes Aircraft's Electro-Optical Data Systems Group in El Segundo, Calif., is a leading developer and manufacturer of advanced thermal imaging and laser systems. Hughes Aircraft produces the thermal imaging system for the M1 tank program and the laser ranger used with the airborne Cobra Tow system. Both systems are in the Army's inventory with a well-established support base.



Artist's Concept. Valley Systems Division, the prime contractor, is teamed with two other companies in seeking a contract for the U.S. Army's Pedestal Mounted Stinger (PMS). PMS is a component of the Army's Forward Area Air Defense program which will mount Valley Systems' Stinger missile and an advanced fire control subsystem on the High Mobility Multipurpose Wheeled Vehicle chassis.



Material Service Lends a Hand. When record rainfall hit the Chicago area in late September and October, Material Service employees and suppliers were used to help stem the flooding at a number of suburbs. In the Lyons, Ill., and Riverside, Ill., areas, sand and stone screenings from Material Service's Lyons yard were loaded on trucks (photo at left) and sent to critical areas. Many Material Service employees also joined local volunteers in putting the sand and screenings into bags and then piling the sandbags along the rapidly rising Des Plaines River in Lyons (center photo and photo at right). Material Service volunteers and sandbags also helped fight the flood battle in other Chicago areas.

Material Service Responds to Call in Flooded Chicago Area By Adrienne Raiford

The Material Service Corporation responded quickly to an emergency call and employees and supplies were used to fight the recent widespread flooding in the Chicago area.

Record level rainfall had hit Chicago and its neighboring suburbs during the month of September, causing rain-swollen streams to overflow. By early October, communities just a few miles west of Chicago were deluged. And then, after a brief respite, heavy rains fell again, causing serious flooding problems to an extensive area.

The Illinois Emergency Services and Disaster Agency called the flooding the worst ever in the State of Illinois in terms of its effect on residents and their property. Damage throughout the state was estimated at \$100 million, much of it in the Chicago area.

The Village of Riverside, one of the suburbs hardest hit from the flooding, borders the Des Plaines River on the east and is just north of the Sanitary & Ship Canal. Village officials were swamped with requests for sand and sand bags as residents helplessly waded through knee-high and chest-high water in their basements. The situation was getting desperate.

Calls for sand and sandbags came into Material Service

because water in Riverside was expected to crest at two and a half feet above flood level. Lyons and Brookfield also needed help, and the Veterans Administration Hospital in Maywood was expected to be hit hard.

Although many of the Material Service yards were already closed, the Material Service relief plan was put into action through the coordinated efforts of yard and quarry foremen, transportation managers and top administrators. Riverside officials needed a fast response by Material Service trucks because they feared that if the Des Plaines River continued to rise, it would breach a two-block long levee on the river's east bank.

Material Service loader operators and truckers worked overtime to deliver nearly 122,000 pounds of sand from Yard 46 in Algonquin, 184,000 pounds from Yard 52 in Dundee and 636,400 pounds of stone screenings from Yard 19 in McCook for the rain-stricken Riverside area.

Material Service employees also joined local volunteers in bagging the sand and piling sandbags along swollen streams and rivers.

Normal transportation routes were closed and Material Service trucks were unable to get into areas hardest hit by the flood. Fortunately, there was no shortage of volun-

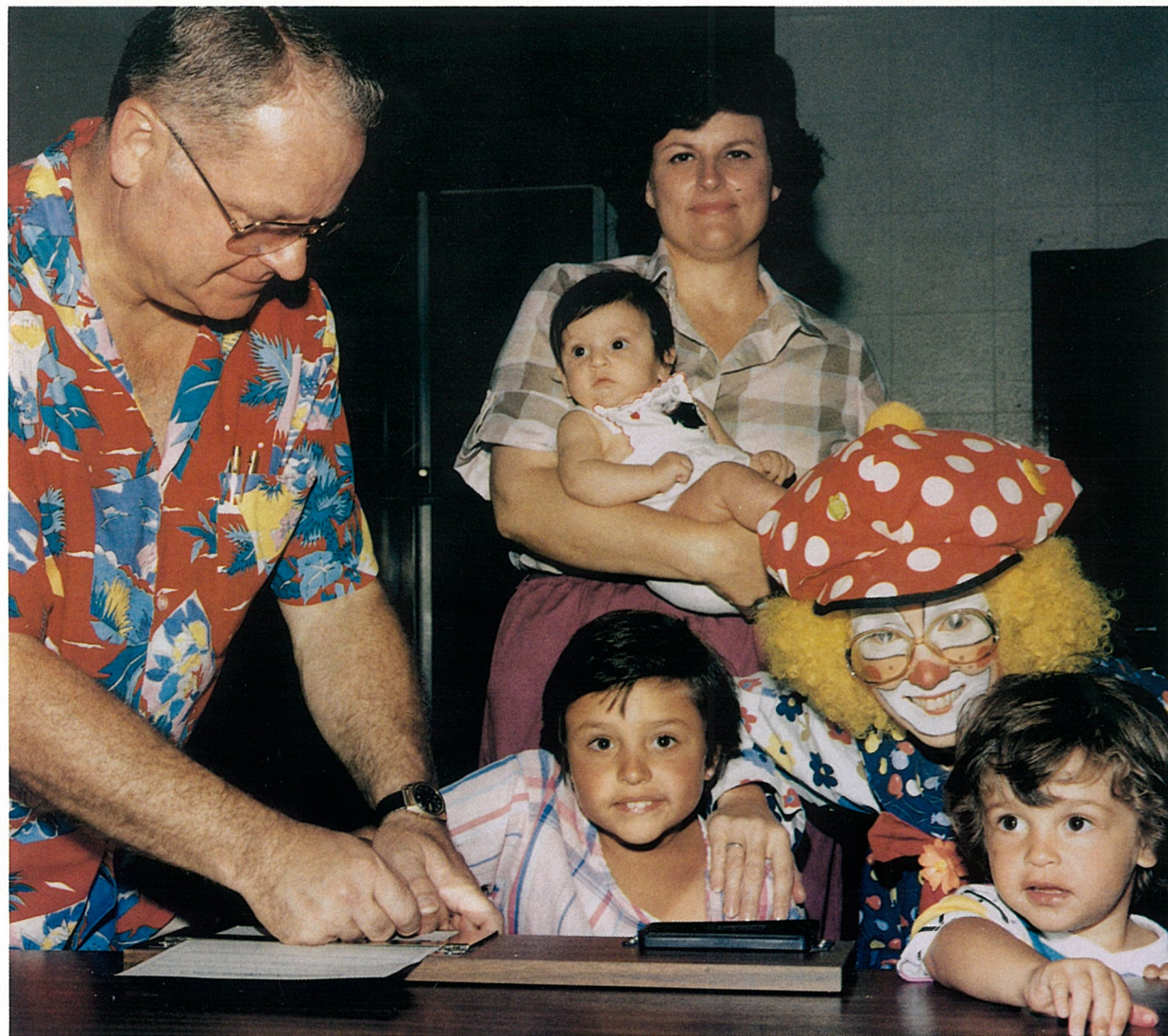
teers, and they worked continuously to get the donated bags of sand and screenings where they were needed. People filled wheelbarrows, buckets and plastic garbage bags and carted it to their homes.

Some volunteers bagged near the levee and others at a nearby bridge, hoping to prevent the more than eight feet of rain water from further overflowing into their town.

Material Service also responded with 10,000 bags and 93,400 pounds of screenings to the stricken Lyons. At Brookfield, village trucks picked up 89,000 pounds of screenings from Federal Quarry at Yard 19, and Material Service trucks delivered 47,000 pounds of screenings to help save the Maywood VA Hospital.

When the rain finally stopped and water levels stabilized, the emergency effort by Material Service ended. The recovery period, however, was expected to take several weeks. Although the worst had passed, additional rain kept the flood waters from receding as fast as originally expected.

The Material Service trucks and people, meanwhile, were able to go back to their normal duties.



Operation Thumbs Up. Volunteers from Data Systems Division-Western Center and Convair Security recently held a children's identification day in San Diego as a service to parents. Children received a free fingerprint record and a button with their own thumbprint. Tom DeAvery (left) of DSD-WC Security fingerprints Shabahang Mohseni as Mrs. Janice Mohseni (holding Jaleh), KatyDee the Clown and Mehry Mohseni look on.

Trident Tennessee To Be Christened

Tennessee (SSBN 734), the nation's ninth *Ohio*-class missile-firing submarine, is scheduled to be christened on Nov. 15th at Electric Boat's Groton, Conn., shipyard.

Mrs. Landess Kelso, wife of Adm. Frank B. Kelso, Commander-in-Chief, U.S. Atlantic Fleet/Deputy Commander-in-Chief, U.S. Atlantic Command, will be the sponsor.

The christening will be the second this year. *Helena* (SSN 725), a *Los Angeles*-class fast-attack submarine, was launched June 28th.

San Diego Divisions' Safety Program Cited

Convair's Safety Department has received a special award from the "Buckle Up San Diego" program for its effective employee education program on seat-belt use.

In presenting the award to Randy McPheeters, Manager of Safety and Fire Protection, and Safety Engineer Mark Schwartzel, "Buckle Up" representative Louise Nichols said that Convair's program covering three San Diego divisions was an excellent model for other companies to follow. The program included training for drivers of company vehicles and awareness messages through various media for employees and families.

Sponsored by the San Diego County Safety Council, "Buckle Up" focuses on educating the public through major San Diego employers. A recent survey showed that San Diego has the highest seat-belt use among 12 California cities surveyed. Nichols said, "The award is a thank you to General Dynamics, the largest private employer in San Diego, for helping save lives."

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Rogers and Wood Are Appointed to Executive VP Posts

General Dynamics has announced the appointments of Herbert F. Rogers and Frederick S. Wood to executive vice president positions at Corporate Headquarters in St. Louis.

Rogers has been appointed Executive Vice President-Aerospace and elected to the Board of Directors effective January 1987. He will succeed Richard E. Adams upon his retirement in January after 35 years with the company. Rogers has been a Corporate Vice President and the Fort Worth General Manager since 1981.

Wood has been named Executive Vice President-Contracts, Pricing and International Offset, effective immediately. He has been Corporate Vice President-Contracts and Pricing since 1978.

Chairman Stanley C. Pace said the appointment of Rogers was being announced in advance "to effect a smooth and orderly transition into this extremely important position." Pace also announced that Charles A. Anderson, Fort Worth Vice President-Research and Engineering, will succeed Rogers as a Corporate Vice President and Fort Worth General Manager.

Pace said that Rogers will work over the next few months with Adams, who has also been a member of the Board of Directors since 1981. "Dick Adams has long played a key role in the success of this company," said Pace. "Under his leadership the aerospace segment of our business has experienced substantial growth and diversification."



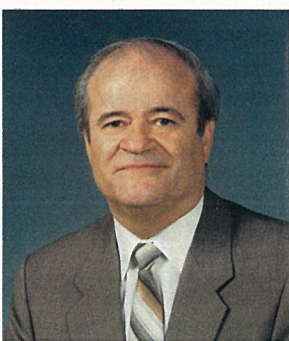
Adams



Rogers



Wood



Anderson

The appointment of Wood, said Pace, "reflects the continuing significance of the company's commitments to the Department of Defense and the increasing importance of offset agreements to our overseas business."

Rogers joined General Dynamics in 1949 as a design engineer and later held a number of aerospace engineering and program management positions with both Fort Worth and Convair. He served as Vice President and Deputy General Manager at Fort Worth from 1977 to 1981.

Rogers is a 1949 Aeronautical Engineering graduate of Purdue University and received an Honorary Doctorate of Engineering there in 1979. He has served in various key positions with the Tarrant County (Texas) United Way for the past four years and is on the Board of Directors of All Saints Hospital in Fort Worth.

Wood joined General Dynamics in 1978 after 17 years of increasingly responsible positions as a civilian employee of the U.S. Air Force. He received a degree in business and economics from the University of Dayton in 1952 and is also a graduate of the Defense Management System course at the U.S. Naval Postgraduate School. Wood is on the Board of Directors of Barnes Hospital and the University

(Continued on Page 3)



Air Defense Configuration. F-16s at Edwards AFB, Calif., and on Fort Worth's flight line are equipped with some of the stores to be carried by the Air National Guard's Air Defense F-16A/B aircraft: external fuel tanks, AMRAAM missiles and AIM-9 missiles (on wing-tip launchers).

F-16A/B Version Wins the ADF Competition With High Performance and Lowest Cost

Air Force Secretary Edward C. Aldridge, Jr., announced on Oct. 31st that the Air Force has selected a modified version of the Fort Worth-built F-16A as the Air National Guard's new Air Defense Fighter.

In addition to the winning proposal — to provide modification kits to convert 270 existing F-16A/B Fighting Falcons to perform the air defense mission — Fort Worth had also submitted a proposal for new, missionized F-16C/D aircraft.

After a six-month review of initial costs, performance characteristics, supportability and life-cycle costs under these two proposals, as well as a competing proposal for Northrop's F-20, the Air Force selected the Air Defense F-16A/B option, Secretary Aldridge said.

"While all three proposals met the technical requirements and mission performance needs of the air defense

mission, both versions of the F-16 were superior to the F-20 in terms of cost and capability," he said.

Secretary Aldridge noted that the F-16A option, for \$633 million, offers the most effective approach to upgrading the air defense force in the reduced funding environments the USAF faces. In its air defense role, the F-16A will replace F-4s and Convair-built F-106s flown by 11 Air National Guard squadrons.

The aircraft will be used to maintain the sovereignty of U.S. airspace and, in the event of hostilities, detect, identify and destroy air-breathing threats to the North American continent, Secretary Aldridge said.

Herbert F. Rogers, Vice President and Fort Worth General Manager, called the decision "a very important

(Continued on Page 2)

General Dynamics Is Part of Winning Team In USAF Selection of ATF Prototype Builders

Lockheed Corporation, General Dynamics and The Boeing Company will work as a team to carry out a \$691 million contract recently awarded to Lockheed by the U.S. Air Force for the design, manufacture and flight testing of two advanced tactical fighter (ATF) prototype aircraft, as well as development and demonstration of an associated avionics ground prototype system.

The three companies will share in the ATF program to the greatest practical extent under terms of a teaming agreement established last June.

On Oct. 31st, Air Force Secretary Edward C. Aldridge, Jr., announced that the three-company team will compete with a Northrop-McDonnell Douglas team during a 50-month demonstration/validation phase of the ATF program. At the completion of this phase, one contractor or team will be advanced to the full-scale development phase of the ATF program, which will last five years and lead to the aircraft's initial operational capability in the mid-1990s.

"The ATF will be both lethal and survivable against the threat and defense projected for the late 1990s and beyond," Secretary Aldridge said. "This will be achieved through a proper balance of speed, maneuverability, reduced observables, integrated offensive and defensive avionics, and an emphasis on reliability and maintain-

ability," he said. "Not only must we build an ATF with the capability to cope with the ever-evolving threat, we must do so at a cost that allows us to buy the number of ATFs we will ultimately need," he added.

Chairman Stanley C. Pace said, "This team brings together much of the best technical and management capability in the United States. We are committed to designing, building and demonstrating the most capable fighter weapon system in the world."

"We fully appreciate our obligations to the Air Force on this critically important, long term program," Pace said. "We are strongly committed to providing the technical, management and financial resources essential to ATF program success. We (as a team) are jointly committed to winning the ATF full-scale development program."

Herbert F. Rogers, Vice President and Fort Worth General Manager, said the ATF program marks the beginning of a new era of aerospace business. "The ATF program is a major technical challenge and a tough cost challenge, but it has the added dimension of being an unusual management challenge," he said.

The ATF prototypes are scheduled to make their first flights in 1989. The Air Force intends eventually to procure 750 of the aircraft at a cost not to exceed \$35 million each.

Flora Brewer Was Considered Ideal Person as Ethics Facilitator By Joe Stout

Fort Worth's Flora Brewer says she thought about hiding, figuratively speaking, when she heard last spring that each of the division's 20,000-plus employees would eventually be scheduled to attend an Ethics Awareness Workshop.

It was not that Brewer doesn't like a challenge, it was just that she had plenty to do already as Administrator of Management Development, the department responsible for all management and professional technical and administrative training conducted at Fort Worth.

But hiding wouldn't have helped Brewer when Jerry Sills, Fort Worth's Ethics Program Director, needed someone to be the division's first Ethics Awareness facilitator.

"As one of the rare people who can do an excellent job of developing an effective instructional system and also do an excellent job of delivering it, she was the perfect person for the task," Sills explained.

Brewer sat in on the first Ethics Awareness Workshop conducted at Fort Worth for the General Manager and his staff and was assigned to lead a workshop for others in upper management shortly after. Since she was one of the first people to lead an ethics workshop outside of Corporate Office, Brewer made significant contributions to the workshop format that is now being used throughout the corporation.

Due to schedule requirements, Fort Worth's first workshop was held while a corporate team was still developing a format for use at the divisions.

"I used some of the materials they had already developed and combined some charts and materials of my own," Brewer said. "The team, in turn, incorporated some of my materials and some of the lessons I learned while conducting the early sessions."

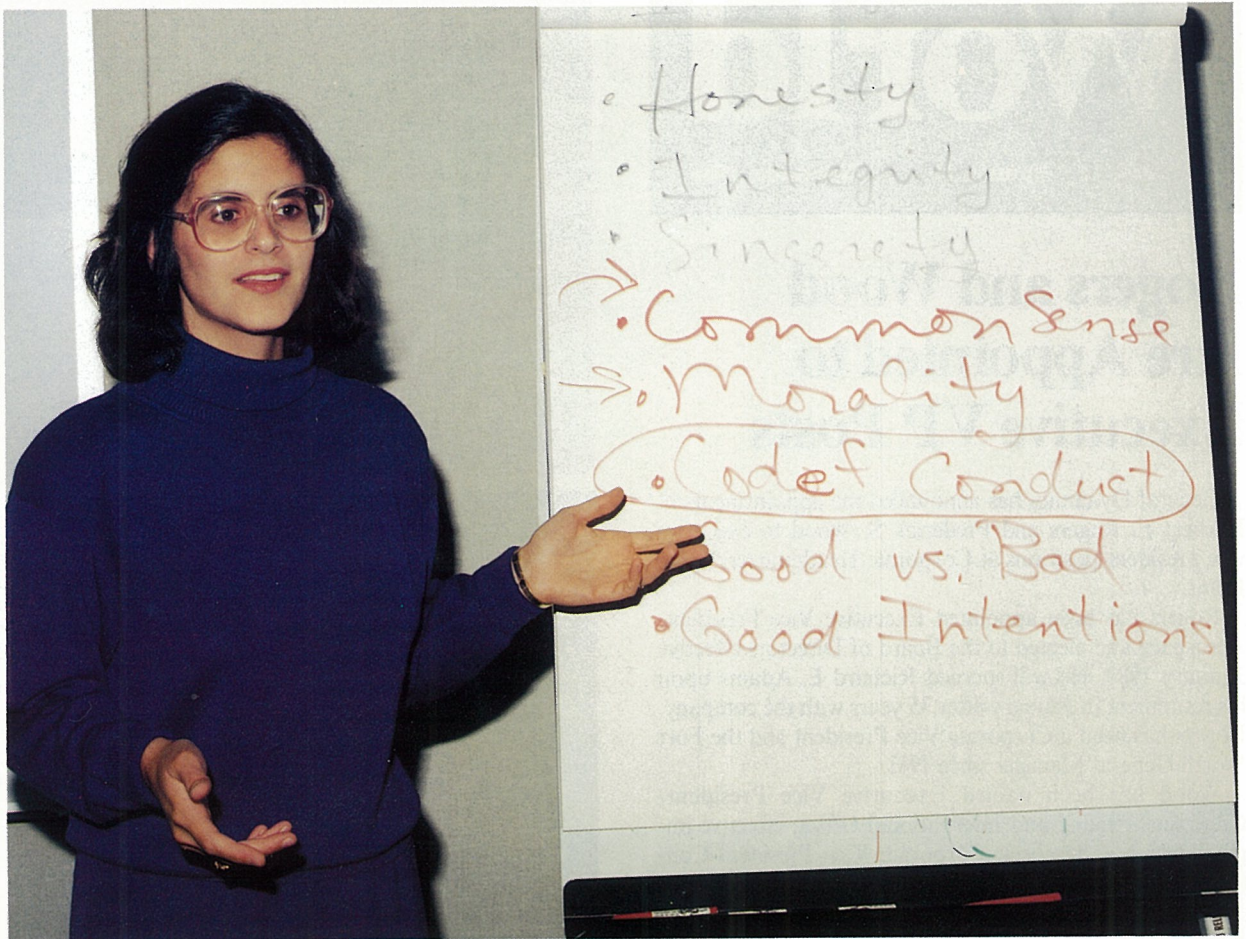
Jack Shultz, Fort Worth Productivity Specialist, who was a member of the corporate team that developed the workshop format, said Brewer helped make the program "more concrete and specific, instead of very academic and theoretical."

Brewer led workshops for division vice presidents and directors, then began "training the trainers," imparting the workshop format to six other professional instructors/facilitators who would lead the workshops for division supervisors.

The six facilitators trained by Brewer then trained 60 others who were selected from among the ranks of employees in departments throughout the division. These facilitators are now proceeding toward the goal of ensuring that all employees, at all levels, have attended an ethics workshop.

Brewer admits she felt some frustration, at first, about the role of the Ethics Awareness facilitator, which is to stimulate discussion without attempting to answer the complex questions that arise in the sessions.

"People expect answers when they go through training. It took time, but I eventually became comfortable with the idea that there are always going to be ethical dilemmas in the workplace, just as there are in everyday life, and that you can't always find instant solutions," she said.



Fort Worth Ethics Facilitator Flora Brewer Conducts an Ethics Awareness Program Workshop

The objectives of Ethics Awareness training are to show employees how to recognize ethical dilemmas, how to use a problem solving model to deal with such situations and where they can go for help with ethics questions.

"In teaching others to lead ethics discussions, I advised the new facilitators that they would feel the same pressure to provide answers that I had felt," Brewer said. "Then I told them, 'that's not your role, that's not what you're there for.'"

Brewer said the ethics trainers have also had to "take the heat," at times, from employees who did not understand why they were being required to attend a workshop, or who felt that the company was treated unfairly in the media during the last two years.

"The facilitator tries to help people sort out their ideas and emotions, acknowledging the validity of their concerns, while helping them understand how an improved understanding and implementation of acceptable standards of business conduct is relevant to them in their daily work," she said.

Sills said Brewer showed a natural ability to get groups into "a receptive mode" at the division's initial workshops, when overall response to the workshop format was still untested. "It was interesting to watch things change (in a workshop session)," Sills said.

"At first, the participants displayed a lot of negative body language, with their arms crossed and so forth, and

they didn't want to talk much. Then Flora would direct the discussion in a way that would get them all talking, which allowed each individual to see that others in the group felt the same emotions about the subject that he did. After the expression of emotions peaked, the tone would change to one of working together to find lasting tools for handling ethical dilemmas," Sills said.

Ted S. Webb, Fort Worth Vice President - F-16 Programs, who attended one of the first workshops led by Brewer, noted that she has received spontaneous applause from participants at the close of several workshops.

With Fort Worth's Ethics Awareness training program well on track, Brewer is now spending most of her time on her administrative duties in Management Development. "I still serve as an Ethics Awareness facilitator occasionally, to keep my skills sharp," she said.

Brewer has been with Fort Worth five years. She holds a bachelor's degree from Michigan State University and a master's in human resources from the University of Kansas.

She said there have been some very satisfying moments in her experience as an ethics workshop leader, such as the times when supervisors and their employees have opened new lines of communication in the course of workshop discussion.

"When things like that happen, the program becomes tremendously powerful," she said.

Fort Worth Wins Air Defense Competition With F-16A/B Proposal

(Continued from Page 1)

win" for General Dynamics. "This validates, once again, that the F-16 has both the highest performance and lowest cost of any fighter of its type in the Free World. This is important to our domestic sales to the USAF and to our international sales, into the 1990s," Rogers said. "We won this competition hands-down, on every element of performance and cost."

Fort Worth will deliver the first Air Defense modification kit in 1988. The USAF will install the kits at Ogden Air Logistics Center, Utah, in conjunction with aircraft modifications already planned under the F-16A/B Operational Capabilities Upgrade program. The AD F-16A/B aircraft will be capable of carrying and firing advanced

medium range air-to-air missiles (AMRAAM) and AIM-7 beyond visual range missiles. The aircraft will also be equipped with identification friend or foe (IFF) systems, drag chutes, night identification lights and long range communication systems.

Sen. Phil Gramm, who visited the Fort Worth plant on the day of the announcement, said the decision "reaffirms the confidence that the Congress and the Air Force have placed in this number one, world-class fighter."

House Majority Leader Jim Wright, also at the plant, said the decision will result in a large savings for taxpayers and is "a great tribute" to the high quality work done by the production, design and management team at Fort Worth.

Current-version F-16A/B aircraft are already being flown by one Air National Guard air defense unit, the 125th Fighter Interceptor Group at Jacksonville, Fla. Three other ANG units have already been scheduled to receive current-version F-16A/Bs.

In August 1985, Congress directed the Air Force to conduct an open competition to choose an Air Defense Fighter. Secretary Aldridge said he was "extremely pleased" with the result of the competition, because "we're now able to upgrade our air defense force and modernize our tactical fighter force in the most cost-effective way."

San Juan, Trident Tennessee To Be Christened

The SSN 688-class fast-attack submarine *San Juan* (SSN 751) is scheduled to be launched on Dec. 6th at Electric Boat. The sponsor will be Mrs. Sherrill Hernandez, wife of Vice Adm. Diego Hernandez, Commander of the U.S. Navy's Third Fleet. Vice Admiral Hernandez will deliver the principal address at the ceremony.

San Juan will be the 21st fast-attack submarine to be launched by Electric Boat. The shipyard launched a sister

ship, *Helena* (SSN 725), in June.

The launching of *Tennessee* (SSBN 734), the nation's ninth *Ohio*-class missile-firing submarine, has been rescheduled to Dec. 13th at the Groton, Conn., shipyard. Mrs. Landess Kelso, wife of Adm. Frank B. Kelso, Commander-in-Chief, U.S. Atlantic Command, will be the sponsor. Admiral Kelso will be the principal speaker.

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Some Jet Model Airplanes Designed to Duplicate the F-16's Performance

At least five employees at Fort Worth build and fly ducted fan jets, the fastest, most authentic and most expensive radio controlled model airplanes available to hobbyists.

Ducted fan airplanes are to modeling what the F-16C is to fighter technology — the latest state of the art. Their propulsion systems work on the same principle as real jet engines, making their flying performance as close as possible to that of the aircraft they are intended to duplicate. Many are equipped with retractable landing gear, and some are embellished with painstakingly rendered design details, down to miniature controls in the cockpits.

Their costs, which can range from \$800 to more than \$2,000, have inspired one of the modelers, Ed Couch of Technical Publications, to quip that ducted fan flying "is not a fly-by-night hobby."

Couch means it both ways when he denounces flying by night: Ducted fan flying is not ordinarily a temporary pastime, because of the investment required, and those who practice it avoid flying under conditions that would reduce operator visibility, like waning daylight — a crash at 130 mph usually means the end of one of the models.

Ducted fan "pilots" currently make up less than two percent of the model-making community, according to Couch, who is a member and past president of the Greater Southwest Radio Control Club. So it may seem unusual that at least five hobbyists who fly the planes work at one company, but the Fort Worth-built F-16 is one of the most popular — and most successful — airplanes being emulated with ducted fan jets.

"The structural features of the F-16 make it a natural for ducted fan flying," Couch said. "Almost every modern airplane that has flown has been modeled in radio control, but the Fighting Falcon and the Russian MiG-15 seem to have the best performance records for ducted fans."

Couch served as contest director and principal organizer when his club recently sponsored the Greater Southwest 4th Annual Fan Fly-In, a national event held at a small airport near Fort Worth. More than 50 pilots from around the nation brought their ducted fan airplanes for two days of nonstop flying. Among the models were a number of F-16s, in a variety of markings.

"One thing we've learned from experience is that the gray paint scheme of a U.S. Air Force F-16 works too well as camouflage, making it hard to see the airplane in flight. Consequently, most modelers choose more colorful designs, like those of the Thunderbirds' F-16s, the YF-16 prototypes or the full-scale development F-16s," Couch said.

The key to the high performance of a ducted fan model is a nitro-methane and alcohol burning engine that runs at about 22,000 rpm, approximately twice the speed of a conventional, nose-mounted model aircraft engine. Power is boosted by a "tuned pipe" that sucks exhaust gases out of the engine, enhancing combustion. When running, the engines make a unique, almost eerie whine that fan flyers consider music, according to Couch.

The engine and fan, or impeller, are internally mounted. Air is ducted out the rear of the aircraft to produce the thrust necessary for flight. Depending on what scale the model is built in, the flying speed of the model is usually



Fan Flyer Inventory. Fort Worth employees Oscar Guerra, Lane Crabtree, Butch Sickels, Ed Couch and Don Downing (left to right) show off their ducted fan models on airport runway at the 4th Annual Fan Fly-In. In foreground are Guerra's 1/6th-scale YF-16 and Downing's 1/10th scale F-16C, which is still unpainted. Aircraft in background is Sickels' 15-foot, four-engined Concorde.

greater than Mach 1, the speed of sound, if proportionally multiplied.

The models typically weigh between four and 25 pounds — a fact that encourages modelers to stay out of each others' way while the airplanes are flying, Couch said.

Ducted fan models are available in kit form, but many jet modelers build their aircraft from scratch. Couch has used both modeling methods; currently, his favorite model is a kit-built A-4 Skyhawk.

Another employee, Don Downing of the Engineering Displays group, recently built a one-tenth-scale model of the F-16 from scratch that includes such realistic features as movable trailing edge and leading edge wing flaps and a steerable nose landing gear. Downing said he spent about 300 hours working on the project.

Downing plans to paint the airplane like the F-16C that was flown by Fort Worth pilots at the 1985 Paris Air Show. "I'm also going to install a more powerful fan and engine combination so that the airplane will be able to fly the Paris Air Show F-16C flight routine," Downing said.

Butch Sickels, an employee in Fort Worth's Metal Mockup area, has been working for five years on a home project that has attracted the attention of several model

makers' magazines. Sickels is building from scratch a 15-foot, 45-pound model of the Concorde SST, powered by four ducted fan engines. Like the real Concorde, the model is equipped with a movable nose that can be automatically lowered to increase cockpit visibility, Sickels said.

Several people have told Sickels that his airplane will never fly, but he hasn't let that discourage him.

Oscar Guerra, an assembly inspector in the wing manufacturing area of the F-16 factory, recently completed a ducted fan model of a YF-16. He flew it for the first time at the Fan Fly-In.

Lane Crabtree, who works with Couch in Technical Publications, is currently building a MiG-15.

All the employees used the Fan Fly-In as an opportunity to show off their airplanes, even though some of the birds were in varying stages of completion.

More than 80 models were flown at the event, and 15 were destroyed — "a normal rate of attrition," said Couch.

"Even the people who lost their models had a good time, though. There was a lot of camaraderie, and the only complaint I heard was that we need to get together and fly more often," he said.

Land Systems Centralizes 150 Employees In Effort to Facilitate Engineering Changes

Land Systems has started a concentrated effort to reduce the time and paper required to process engineering changes.

The major thrust of the effort is the consolidation of the personnel involved in processing the changes in a work cell located at the Center Line facility. The cell is part of an overall effort developed by A. W. (Bill) Carion, Land Systems Vice President and M1 Program Director.

"We had been wasting time moving changes between our various locations," Carion said. "We were bringing the customer into the process too late, and the system itself was inherently cumbersome."

Gregory J. Tomaszewski, newly appointed M1 Deputy Program Manager for Configuration, has responsibility for all functions involved in the change processing. The work cell is headed by Norman S. Dyer, Chief of Configuration Management, who reports to Tomaszewski.

The move of personnel to one location involved more than 150 employees, 40 from locations other than Center Line. Many others were moved from Center Line or relocated there to make room for the work cell.

Those in the work cell are focusing on reviewing, selecting and incorporating those changes that will improve the quality of the M1 tank or make it cheaper to produce, or both. The change system includes creating the drawing, writing the change paper, getting Land Systems and U.S.

Government approvals, establishing production effectiveness and associated logistics, determining the costs and releasing the change package for implementation.

"The work cell concept has many hidden meaningful advantages," said Raymond D. Kubiak, a member of the cell from Contract Change Estimating. "We solve problems immediately because the experts are all here. The cell also provides increased visibility of priority changes, which helps expedite processing."

Tomaszewski said another major change involves creation of a Change Control Board, staffed by both Land Systems and government personnel, to screen change candidates early in the process and eliminate those not practical or cost effective.

"By bringing the government in early, we eliminate the time and cost of processing changes that would have later been rejected," Tomaszewski said.

He added that more than 60 changes have already been withdrawn from the system through this front-end screening and frequent meetings of the Change Control Board.

Tomaszewski said that the colocation of all of the different skills at one location involved risk, "but it was a risk worth taking. Early results show that it's paying off. I have confidence that the payoff will soon be even greater, especially with the further system streamlining we're working on."

Rogers, Wood, Anderson Appointed to New Posts

(Continued from Page 1)

of Dayton Board of Trustees.

Anderson holds a degree in aeronautical engineering from Texas A&M University and is a former Air Force officer. He joined Fort Worth in 1956 and has served in a number of engineering management positions, including Manager of Flight Control Systems and Director of Aerospace Technology.

Savings and Stock Investment Plans			
Annual Rate of Return for the 12 Month Period Ending:			
	Sept. 1984	Sept. 1985	Sept. 1986
Salaried			
Government Bonds	8.1%	14.8%	13.4%
Diversified Portfolio	(0.1%)	18.0%	36.1%
Fixed Income	12.3%	12.4%	12.0%
Hourly			
Government Bonds	8.1%	14.8%	12.8%
Diversified Portfolio	(0.7%)	17.3%	37.2%
Fixed Income*	N/A	12.4%	12.1%
GD Stock Closing Price	\$69.62	\$60.75	\$71.37
* Fixed Income effective 6/30/85			

Bernard J. Kuchta to Head Hypersonic Technology Program at Convair

Bernard J. Kuchta has been appointed Division Vice President and Program Director-Hypersonic Technology Program at Convair. He will direct divisionwide efforts toward winning the competitive Strategic Boost Glide Vehicle (SBGV) flight demonstration contract.

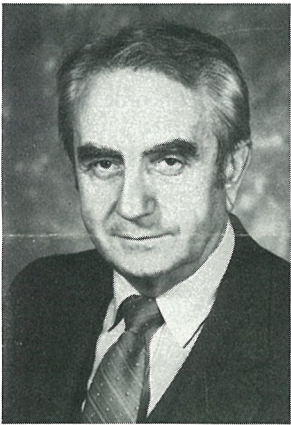
The SBGV is a hypersonic, endoatmospheric glide vehicle capable of broad application to U.S. Air Force strategic and air defense missions.

Kuchta, 50, began his career with Convair in 1957 as a dynamics engineer, later serving in positions of increasing responsibility in Research and Engineering. In 1977, he was named Director of Development for the Air Launched Cruise Missile Program and became Deputy Director-Cruise Missile Program in 1980. In 1982, he was appointed Division Vice President and Cruise Missile Chief Engineer, with responsibility for all engineering activity on the Tomahawk cruise missile, launch support and training equipment.

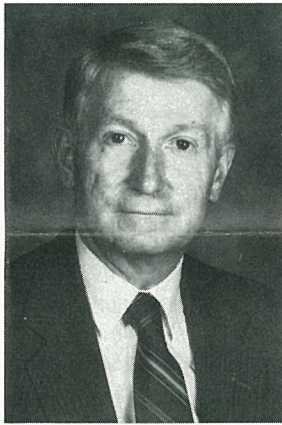
Kuchta earned a Bachelor of Science degree in Mechanical Engineering from New Jersey Institute of Technology in 1957 and a master's degree in aerospace engineering from San Diego State University in 1967. He taught flight mechanics at San Diego State University, and in 1979 the university named him Engineering Alumnus of the Year. He has written numerous papers for technical societies and received the NASA Innovator Award in 1977.



Kuchta



Trausch



Haines

Haines and Trausch Named Electric Boat Div. Vice Presidents

Two Electric Boat executives have been promoted to newly created posts of Division Vice President.

They are Craig Haines Jr., who has been appointed Division Vice President-Material, and George Trausch, who has been named Division Vice President-Planning and Material Systems.

Haines, Assistant General Manager-Material since May, joined Electric Boat as a technical writer in 1962 and transferred to the Planning Department two years later. He held positions of increasing responsibility in the Planning Department, then became Deputy Manager of the 688-class program in 1973, a post which he held until becoming Purchasing Director in 1979.

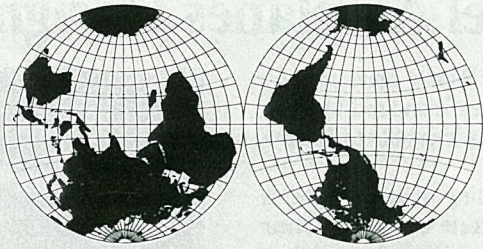
Prior to joining the division, Haines served three years as a naval officer. He holds a bachelor's degree from Dartmouth College and a Master of Business Administration degree from the University of Rhode Island.

Trausch joined the division in 1978 as Manager of Engineering at the Quonset Point facility. He later became Director of Engineering there.

In April 1981, he became General Manager of the Quincy Shipbuilding Division's Charleston, S.C., facility. He returned to Electric Boat in January 1983 as Assistant General Manager-Planning and Material Control, a post he held until his present appointment.

Before joining General Dynamics, Trausch held several engineering and supervisory positions in commercial industry in both the U.S. and Canada.

Trausch holds a Master of Science degree in Mechanical Engineering from The Technical University in Budapest, Hungary.



Around the World

CHQ: John M. O'Leary was appointed to Finance-Offset Corporate Director . . . R. Bradley Gale joined as Corporate Director-Dayton . . . Wendell D. Banks and Douglas K. Alte as Corporate Dayton Representative . . . Carl E. Geyer Jr. as Information Systems Supervising Senior Auditor . . . Mark B. Fry as Corporate Fort Walton Beach Representative . . . Gary F. Kucera as Auditor . . . John C. Schoep transferred from Electronics and was appointed to Corporate Director-Technology Planning . . . Sally E. Bub was promoted to Senior Staff Accountant . . . Jana L. Jones to Auditor/Administrator . . . Irene O. Rock to Corporate Accounting Operations Supervisor . . . Joni L. Boutelle and Randall L. Smith to Supervising Senior Auditor . . . Joseph J. Dix to Supervising Senior Informations Systems Auditor.

Fort Worth: Wayland Keith was appointed to Production Management Director . . . Dennis A. Chesshir to Industrial Security Director . . . John M. Alland, Kenneth D. Knudson, Darrell E. Mowry, Leo B. Rickmers Jr., Vernon D. Smith, Nicolas Wensowitch and Don M. Wheeler were promoted to Engineering Chief . . . George R. Artmier and Leland J. Rainey to Project Tool Engineer . . . Karon D. Baskin, Michael L. Hester, Craig W. Masterton, Döris I. McKee and Sherry L. Stripling to Human Resources Supervisor . . . Joe Basquez to Logistics Engineer . . . Lynn G. Bourne and Bruce N. Smith to Inspection Supervisor . . . John F. Buckley to Integrated Logistics Support Program Manager . . . Michael R. Chapman to Senior Process Planner . . . John M. Childs to Principal Field Service Engineer . . . William R. Collins, Lawrence J. Knapp and Darwin L. Schierer to Logistics Group Supervisor . . . Charles H. Croxton Jr. and Donald E. McGibboney to Engineering Administrative Specialist . . . David G. Draper, Bruce E. Meyer and Charles W. Robbins to Field Service Engineer . . . Gail L. Dutch to Engineering Change Representative . . . Billy Farmer to Manufacturing Control Supervisor . . . Patricia A. Hammer to Senior Technical Publications Analyst . . . Richard L. Havens to Procurement Chief . . . Aubrey O. Hollis to Field Operations Manager . . . Samuel C. Houston to Logistics Group Engineer . . . Donald H. Kipp to Tooling Supervisor . . . Jerry E. Miller to Numerical Control Chief . . . Michael A. Monroe and James M. Tomlin to Subcontract Management Coordinator . . . William J. Parker to Logistics Chief . . . William E. Rater Jr. to Engineering Manager . . . Kenneth L. Robinson to Senior Engineer . . . Donny G. Sargent and Charles T. Stewart to Production Specialist . . . Nolan L. Sifford to Logistics Supervisor . . . Clois W. Sullivan to Engineering Administrative Group Supervisor . . . David G. Vanecek to Senior Material Project Administrator . . . David L. Walker to Material Cost Analyst . . . Leo F. Watkins Jr. to Assistant Project Engineer . . . Charles G. Weaver to Senior Manufacturing Support Equipment Engineer . . . Ireneus H. Weber to Project Engineer . . . Glen P. Weldon to Logistics Group Engineer.

Space Systems: Thomas A. Donovan was appointed to Proposal Development Director . . . Nancy J. Kuhn was promoted to Finance Chief.

Convair: James B. Reed Jr. was appointed to Engineering Director-Chief Engineer/CM . . . John C. Barrons to Ethics Director . . . Robert L. Allen was promoted to Product Support Chief . . . Gary W. Fredricks to Program Manager . . . G. John Gonias II to Contracts Manager . . . Victor A. Gregorie and Helen J. Littlefield to Purchasing Agent . . . Andrea B. Stephenson and Don R. Holt to Publications Supervisor . . . Mary A. Klement to Engineering Chief . . . Scott H. Patterson to Administrative Chief . . . Douglas M. Peachey to Human Resources Administrator . . . Robert J. McFarland to Finance Manager . . . Johann U. Sulser to Manufacturing Operations Supervisor . . . Philip C. Widmann to Group Engineer.

Electronics: Wilburn C. Kruger Jr. was appointed to Production Programs Director . . . Corazone E. Cortes was promoted to Senior Financial Analyst . . . Thomas D. Hennies to Engineer . . . Kathryn M. Mason to Senior Material Representative.

Land Systems: Dewey E. Brown was appointed to Logistics & Support Director . . . Charles J. Ahern, Edward Hirych, Donald E. Dresselhouse and Richard A. Auyer were promoted to Engineering Manager . . . Lawrence G. Fletcher and Henry F. Levine to Engineering Program Management Chief . . . Leona D. Love to Accounting Supervisor . . . Deborah A. Morris and John Carlan to Quality Assurance Supervisor . . . Gregory C. Lanzon and Jack E. Larson to Program Administration Chief . . . Susan M. Stanford to Administration Supervisor . . . Raymond R. Gorshe to Engineering Services Manager . . . Joseph Martino to Principal Engineer . . . Stanley C. Gacki, Robert H. Kratzenberg and David K. Rock to Engineering Supervisor . . . John D. O'Rourke to Engineering Program Manager . . . Henry J. Elwell to Industrial Engineering Chief . . . David A. Shak and Thomas G. Beining to Industrial Engineering Supervisor . . . Douglas A. Soddors, Michael G. McNamara and Philip R. Grannan to Material Planning & Control Supervisor . . . Stephen A. Dermeyer and Patrick J. Schymanski to Quality Assurance Chief . . . Kenneth W. Wilkins to Engineering Chief . . . Denis M. Glenn and Thomas L. Whalen to General Foreman . . . David G. Rogers Jr. to Inspection General Foreman . . . James I. Bernethy to Security Chief . . . Thomas C. Stephens to Quality Assurance Engineering Specialist . . . Charles M. Hall to DATP Plant Manager . . . James E. Morton to Plant Protection Chief . . . William D. Owens to Guard Captain . . . Michael J. Roualet to Inspection Foreman . . . Richard O. Gillette to Sterling Defense Plant Manager.

Pomona: Clyde R. Ingels was appointed to Camden Operations Engineering Director . . . Marilyn H. Brehm was promoted to Administrative Services General Supervisor . . . Donald E. Briney to Group Engineer . . . Robert E. Brown to Plant Engineering Chief . . . Floyd J. Kreis to Construction and Maintenance Superintendent . . . Larry G. Malm to Section Head . . . Nathaniel D. Pendleton to Project Administrator . . . Brenda L. Rindfleisch to Accounting Supervisor . . . Samuel C. Scull to Manufacturing Engineer . . . Darryl J. Trulin to Engineering Staff Specialist . . . Robert E. Van Antwerp to Design Engineer . . . Kathleen R. Wessels to Senior Publications Coordinator . . . La Verne D. West to Equal Employment Opportunity Manager . . . Paul Z. Yamas to Assistant Project Engineer.

Electric Boat: Owen Scott was promoted to Systems Planning Manager . . . Joan Sienkiewicz to Command and Control System Manager . . . Thomas Baker, Donald Cameron, Peter Champagne, Thomas Connelly and Richard Vaillancourt to Engineering Chief . . . Frank Guinan to Design Chief . . . John DeBartolo, Robert Navin, Robert Yost to Superintendent . . . Herman Belli, David Holliday, Robert Kiefer, Edward Waterman and Donald Wiwczar to General Foreman . . . Patricia Archer and Leonard Landry to Project Control Supervisor . . . James Craney and James Waite to Assistant Superintendent . . . Mitchell Berdinka to Logistics Supervisor . . . Stanley Mazuroski to Configuration Management Supervisor . . . Kevin Poitras and David Pratt to Engineering Supervisor . . . Emery Reagan to Design Supervisor . . . Jodi Reed to Administrative Control Supervisor . . . Margaret SanJuan to Employee Benefits Supervisor . . . David Tela to Audio Visual Services Supervisor . . . Thaddeus Jadcak to Production Methods Engineering Supervisor . . . Brett Chenier and Gary Dossett to Radiological Control Foreman . . . Gregory Dzialo, Robert Vanhoesen, Frank Vetelino and Marcus Williams to Foreman . . . Mack Elder to Laborer Foreman . . . Donald Radicioni to Administrative Control Coordinator. At Quonset Point, Richard Vinal to Quality Assurance Supervisor.

GDSC: Thomas J. Lubischer was promoted to Program Integrated Logistics Support Manager . . . Roger K. Brandon to Logistics Supervisor . . . Terri L. Tyler to Senior Financial Specialist . . . Robert A. Abell, Richard L. Chambers and James E. Morse to Senior Aircraft Specialist.

DatagraphiX: Masa Mayekawa and Richard F. Tracey were promoted to Quality Assurance Engineering Manager . . . Merle W. McLaughlin to Engineering Group Leader . . . Duane A. Quenette to Marketing Software Project Leader . . . Leslie E. Welsh to Telemarketing Sales Manager.

DSD: At Western Center, Jerry L. Atkinson, Stephen L. Gubelmann, Curtis W. McConnell and Susan M. Mikolaitis were promoted to Project Engineering Supervisor . . . James J. F. Butkis to CAD/CAM Chief . . . Terry H. Nathan to Product Control Analyst. At Central Center, Vernon L. Schmieder to Engineering Software Supervisor.

Third Quarter Sales/Earnings Announced

General Dynamics' net earnings from continuing operations for the third quarter and first nine months of 1986 were \$100.0 million, or \$2.34 per share, and \$273.6 million, or \$6.41 per share, respectively. Comparable amounts for the same periods in 1985 were \$100.6 million, or \$2.38 per share, and \$282.1 million, or \$6.67 per share.

Sales were \$2.3 billion for the third quarter and \$6.7 billion for the nine months, compared to \$2.0 billion and \$5.9 billion a year ago. Funded backlog at the end of the 1986 third quarter was \$16.8 billion and the total backlog (funded and unfunded) reached \$23.3 billion, compared to \$15.3 billion and \$21.8 billion, respectively, at the same time last year.

"Although operating earnings in 1986 increased over the previous year, net earnings declined because of interest costs," said Stanley C. Pace, Chairman and Chief Executive Officer. "The seasonal upturn in the general aviation industry improved the results at Cessna Aircraft in the third quarter compared to the first two quarters of the year, and the company continues to take strong cost

containment measures to cope with the prolonged recession in this market."

The following important events occurred in the third quarter:

- The U.S. Air Force awarded the Fort Worth Division a \$4.3 billion multiyear contract for the purchase of 720 advanced F-16C/D aircraft in Fiscal Years 1986 through 1989. The Air Force estimates savings of \$466 million from this four-year procurement, compared with four separate annual buys.

- A Space Systems-built Atlas booster performed the first successful nonmilitary U.S. launch of 1986 in September when it powered a weather satellite into orbit. This marked the 487th successful Atlas launch.

- Land Systems significantly increased the production rate of the advanced M1A1 battle tank, delivering 80 vehicles to the U.S. Army in August and 95 in September. The first M1A1s, which feature increased firepower and greater crew protection over the basic M1 Abrams, entered service with U.S. Army units in West Germany.

2,000th Lima-Built Tank Sets Three Records

The 2,000th tank was recently delivered from the Lima Army Tank Plant, setting two records for the plant and one for Land Systems.

The M1A1 tank was one of a record nine produced without defect at the Lima, Ohio, plant in a one-month period. It was also part of a 47-tank delivery in one month, which broke the plant's previous record of 41 in a 31-day period.

"Not too long ago, someone said that just one defect-

free tank was impossible," said Robert F. Schwalm, Land Systems Vice President-Manufacturing.

In addition, the tank was one of 95 delivered by both the Lima and the Detroit plants in the period, eclipsing the previous record of 86 Abrams tanks delivered in one month.

Lt. Col. Elton D. Minney, Lima Plant Commander, said the 2,000th tank would be shipped to West Germany.

"Brave Rifles" Unit Adds M1A1 to Tradition

The U.S. Army's 3rd Armored Cavalry Regiment, the "Brave Rifles," recently received its first Land Systems-built M1A1 tank, reviving the unit's 140-year history of firing faster and more accurately than any other mounted unit.

The tank was delivered in ceremonies at Fort Bliss, Tex. It was presented to the troops of the 2nd Squadron as the

regimental band played and artillery salutes were fired.

The 3rd Cavalry was established in 1846 as a regiment of mounted riflemen armed with the model 1841 rifle, the army's newest weapon at that time. The troops of the unit had a reputation of firing more accurately and being more mobile than any other mounted unit.

Submarine Louisville Delivered to U.S. Navy

Electric Boat recently delivered the SSN 688-class fast-attack submarine *Louisville* (SSN 724) to the U.S. Navy 95 days ahead of contract schedule.

The 360-foot, 6,900-ton submarine is the 16th ship in a

row that Electric Boat has delivered early.

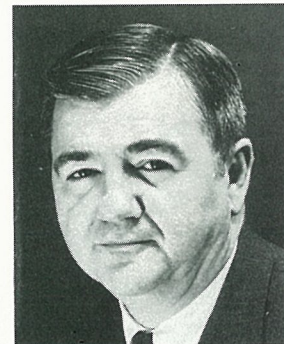
Louisville formally joined the fleet during commissioning ceremonies Nov. 8th at the U.S. Naval Submarine Base at Groton, Conn.

Joseph Mulrooney Named Vice President-Real Estate At Material Service Corp.

The appointment of Joseph P. Mulrooney as Vice President of Real Estate for Material Service Corporation has been announced by Gerald R. Nagel, President. Mulrooney, who has 25 years' real estate experience, will oversee all company real estate. His responsibilities include site analysis, appraisals, mineral reserves and property development.

As former Director of Development for a Marathon Oil Company subsidiary, he was responsible for developing business parks and other commercial real estate ventures, including Burr Ridge Corporate Park, a 315-acre business park in Burr Ridge, Ill.

In addition to his association with various Chicago area organizations, Mulrooney is a member of the National Association of Corporate Real Estate Executives. He has been a licensed real estate broker since 1965.



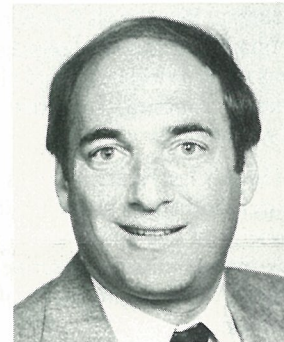
Mulrooney

Space Systems Appoints M. Winkler Division VP-Research & Engineering

Martin K. Winkler has been named Division Vice President of Research and Engineering at the Space Systems Division. He will be responsible for directing and integrating all research, engineering and test activities for the division.

Winkler, 43, had been Shuttle/Centaur Program Director for Space Systems since late 1983. He joined General Dynamics in 1964 as an associate engineer with the company's former Astronautics Division, and served in a series of increasingly responsible positions at Convair, including Engineering Chief for the Air Launched Cruise Missile Program, Manager of Cruise Missile Avionics, Director of Avionics and then Atlas/Centaur Program Director.

Winkler received a Bachelor of Electrical Engineering degree from Cornell University in 1964 and a Master of Science degree in Aerospace Sciences from the University of California, San Diego, in 1968.



Winkler

Cessna Names Marquardt Vice President-Planning And Information Systems

Cessna Aircraft Company has appointed Charles A. Marquardt to the new position of Vice President-Planning and Information Systems.

Reporting to Cessna President Bill Van Sant, Marquardt will be responsible for corporate strategic and business planning functions, in addition to operations research and management information systems.

Marquardt comes to Cessna after serving four years as Director of Corporate Development in the Corporate Office in St. Louis. He joined General Dynamics in 1979 as Corporate Director-Financial Planning for commercial divisions and was later named Vice President-Finance/Planning at the Stromberg-Carlson operation.

Prior to joining General Dynamics, he was Corporate Business Manager, Agriculture Chemicals, for the Monsanto Company in St. Louis.

Marquardt received a bachelor's degree in economics from Gettysburg College in Gettysburg, Pa., in 1963. He also earned a master's degree from the Wharton School of Finance at the University of Pennsylvania.



Marquardt



A Touch of Home At Work. The new Data Systems Division-Western Center building in San Diego contains a wall of ceramic tiles designed by employees' children around the themes "Computers, Our Friends" and "Mom and Dad at Work." Three DSD-WC parents whose children's artwork appears in the permanent display are (left to right) Doug Birse, Computer Operator; Marie Ghafouri, Accounting Technician, and Paul Cofoni, Division Vice President and Western Center Director.



Champion Cook. An engraved vase is presented to Susan Duke (left), a word processor from the Land Systems Sterling Plant, by Paula Blanchard, wife of Michigan Gov. James E. Blanchard, for her blue ribbon entry in the First Lady Candy Box competition at the Michigan State Fair.

Cessna's Seminars On Aircraft Attract Pilots

More than 30,000 aviation professionals and students have attended field service seminars conducted by Cessna Aircraft Company specialists so far this year.

The seminars are designed to provide information on the maintenance and safe, efficient operation of Cessna's propeller aircraft models. They are conducted by factory field service engineers.

A number of seminars have been held this year, including nine Federal Aviation Administration seminars which were attended by federally authorized inspectors, as a requirement of their jobs.

Seminar topics include engine and airframe system reviews; troubleshooting tips; electrical system diagnostics; inspection and preventive maintenance. Also presented are technical reviews of new Cessna models such as the Caravan I single-engine turboprop utility aircraft.

The seminars were also held at the Experimental Aircraft Association convention in Oshkosh, Wis., and at Chicago, Ill. Additional seminars were scheduled in Van Nuys, Calif., and in San Antonio, Tex., to name a few of the locations.

Cessna is the world's largest manufacturer of general

aviation aircraft. The company has built more than 176,000 airplanes, including almost 1,400 Citation business jets and 2,000 military jet aircraft.

Two More Citations Delivered to China

Two Cessna Citation fanjet aircraft have been delivered to the People's Republic of China, bringing the total of Citations operated by the Chinese Government to five.

The two Citation S/II jets are specially modified to carry a wide array of sophisticated cameras, radars, infrared scanners, television gear and atmospheric sounding and sampling equipment.

The aircraft will be operated by the Airborne Remote Sensing Center of the Chinese Academy of Sciences, which is responsible for the development and promotion of remote sensing technology in the People's Republic of China.

Oscar Morales Learned to Speak English and Now Speaks Up for Freedom

When Fort Worth employee Oscar Morales came to the United States from Managua, Nicaragua, in 1965, he was unable to speak or write English. Today, he is an accomplished public speaker who is frequently invited to give talks at meetings of civic clubs and church groups.

Morales said it took him two years to become fluent in English, after which he decided to become a citizen of this country. Most of his family remains in Nicaragua. "When I finally learned the language, I realized how welcome I was made to feel here. And after I saw the great opportunities in America, I decided that I definitely wanted to stay," he said.

In the last year, Morales has addressed more than a dozen audiences in the Dallas/Fort Worth area on the benefits of living in a free society. People who have heard his speeches usually describe them as "rousing" or "emotional," and his remarks often have received standing ovations.

To illustrate his enthusiasm for free enterprise in his talks, Morales contrasts daily life in this country with conditions that exist in Socialist-ruled Nicaragua. "I can give my audiences an inside view of Nicaragua today because I have been able to maintain some contact with relatives there," he explained.

His father, a businessman in Managua, was killed in 1979 because of his belief in free enterprise and democracy, Morales said.

Morales sharpened his speaking skills as a member of a Toastmasters club and began to give the talks about 18 months ago, "because I felt there was too much valuable information that I was keeping to myself."

"In the speeches I give, my goal is to make people think

how fortunate they are to live in such a blessed and dynamic nation."

Morales said last summer's Liberty Weekend festivities had special meaning for him, as a naturalized citizen. "I watched almost all the events on television and thought they were great."

When he arrived in the United States, at the age of 18, the first thing he did was buy a used car for \$50, he said. "I had to spend two days cleaning it up, but I sure felt proud." He was soon working at two jobs to support himself while he attended college.

Since then, he has earned an associate's degree from Tarrant County Junior College and a bachelor's degree in business administration from Texas Wesleyan College. A four-year General Dynamics employee, he is presently a quality assurance project coordinator in F-111 Configuration Management.

"I believe America is still the land where dreams come true, but it takes hard work and financial discipline. America is the land of opportunities, not guarantees," he said.

Morales is also a proficient photographer and has won a number of ribbons in photo competitions sponsored by the Fort Worth Camera Club.

In the future, he would like to give motivational talks for young people, to encourage them to think about planning their futures. "I believe our young people hold the future of the nation," he said.

"Public speaking has been one of my most gratifying experiences to date," he said. "It gives me great satisfaction when people come up to me after a speech and say, 'You made a lot of sense.'"



Accomplished Speaker Oscar Morales

Lauwereins Named Sr. VP - Operations At Material Service Corp.

The promotion of Morris A. Lauwereins to Senior Vice President of Operations at Material Service Corporation has been announced by Gerald R. Nagel, President.



Lauwereins

Lauwereins will be responsible for the company's aggregate operations, Redi-Mix and precast concrete products, engineering and real estate.

Lauwereins has been employed at Material Service for 33 years in various capacities and is also a Director of the company. His former assignment was Vice President of Operations.

In addition to his association with many Chicago-area organizations, Lauwereins has been an active member of the National Ready Mixed Concrete Association since 1968 and served as its Chairman in 1978.

He is a civil engineering graduate of Purdue University.

Our Commitment As Employees

- *We will treat one another fairly and with the dignity and respect due all human beings.*

(From the General Dynamics Standards of Business Ethics and Conduct.)

Citation Center Open

The Long Beach, Calif., airport is the site of Cessna Aircraft Company's newest Citation Service Center, its sixth.

The new center is the first of five new customer service facilities for Citation business jets that will open during a five-year expansion program announced last year.

Richard Levy Named VP - Operations At Material Service Corp.

The appointment of Richard E. Levy as Material Service Corporation's Vice President of Operations has been announced by Gerald R. Nagel, President. Levy will



Levy

and Treasurer of the Texas-based firm.

be responsible for all production facilities in the company's pits and quarries, Redi-Mix plants, marine department and Lockport repair shop.

He is former President of a Material Service subsidiary, El Paso Sand Products Corporation, and now serves as its Chairman of the Board. He has also served as Vice President of Finance

and Treasurer of the Texas-based firm. Levy has been with Material Service for 15 years, serving as Manager of Customer Service, Assistant Vice President of Operations, Manager of Material Control and Assistant Controller.

Interest-Free Loans Approved for Tours Of Turkey, the Orient

Interest-free loans are available for offset tourism programs to Turkey and the Orient, effective immediately.

The tour programs are being operated by Percival Tours under the title "General Dynamics Offset Vacations." Reservations will be taken by General Dynamics travel departments or by a central reservation toll-free number set up by Percival Tours to handle General Dynamics inquiries.

The loan program for offset vacations will follow the same procedures as the computer loan program.

General Dynamics Corporate Offset Tourism is now offering a winter tour program to Hong Kong for only \$799 with a \$59 discount for all General Dynamics employees, retirees, their families and friends. This package for January and February, 1987, includes round trip air transportation on Korean Air and five nights hotel at The Empress in Hong Kong. Also included are transfers on arrival and departure in Hong Kong, American breakfast daily and a half-day, city sightseeing tour. Additional extensions are available.

As a special incentive for group travel, one individual can travel free on the winter package with a group of 10 paying friends.

Brochures and discount coupons for the winter package can be obtained at division travel offices or by calling the Percival Tours toll-free number, 1-800-527-8448 (U.S.) or 1-800-482-8282 (Texas).

The tours are being offered as an important part of the company's offset commitments to put currency back into the economies of Turkey and South Korea, which have purchased the F-16.



Larger Payload for Caravan I. The "stretched" version of the Cessna cargo aircraft, Model 208B, right, is shown with original Model 208A.

Cessna Delivers First 'Stretched' Caravan I Featuring Larger Payload and Cargo Pod

Cessna recently delivered the first "stretched" version of the Caravan I utility propjet to Federal Express Corp.

A total of 70 of the enlarged Caravan Is (Model 208B) will be added to the current Federal Express fleet of 39 original Model 208A cargo versions. FedEx has an option to purchase 90 additional aircraft.

At the delivery ceremony, FedEx founder and Chairman Fred Smith said the Caravan I has made it possible for the air freight firm to meet its prime strategic objective — extending economical and reliable overnight service to smaller cities.

"The aircraft have been outstanding in every respect," Smith said. "We expect the Caravans to play a very large role in the future expansion of our system." He also praised the quality of workmanship of the Caravans.

The Model 208B is four feet longer than the Model 208A and will carry a payload of 3,500 pounds in 450 cubic feet of cargo space, including a cargo pod under the fuselage. This compares to 3,000 pounds and 337 cubic feet in the original Federal Express model. The maximum useful load is 4,273 pounds, up from 3,777 pounds.

Federal Express took delivery of its first Caravan I in February 1985. The FedEx Caravan fleet has flown more than 30,000 hours, maintaining a 99.8 percent mechanical dispatch rate.

Cessna has delivered more than 90 Caravan Is to operators around the world since the first delivery in February 1985. The total fleet has flown more than 50,000 hours hauling cargo and passengers around the clock, often using undeveloped airfields.

New Group at Fort Worth to Facilitate Administrative Improvement

Fort Worth is taking an innovative approach to keeping its administrative functions up to date through the Business Process Modernization (BPM) group, a new section of the Productivity Department operating under a five-year U.S. Air Force contract.

The BPM group is chartered with doing the same thing for Fort Worth's administrative processes that Manufacturing Technology and similar organizations have done for the division's manufacturing functions — placing them at the forefront of the state of the art in the aerospace industry.

The BPM concept fits well with the corporate initiative to achieve the same excellence in administrative performance that General Dynamics has historically achieved in engineering and manufacturing, said Willie C. Livingston, Director of Productivity Programs at Fort Worth.

"Departmental policies and procedures should support people in accomplishing their tasks. With BPM, we're taking a close look at procedures to make sure they are still in step with the times, are as streamlined as they should be and don't make us do unnecessary work," Livingston said. "The ultimate goal is a reduction in 'no-touch' labor costs."

The BPM group operates on an "extended staff" or consultant basis, available to any division department

upon request, said Bill O'Steen, a Program Specialist in the group. "We encourage departments that request our services to think of us as extra staff members, except that our service is independent of their departmental budgets," he said.

The department is funded by the Air Force as part of the service's Industrial Modernization initiative.

Departments and functional groups contact the BPM group voluntarily to request analysis of their administrative procedures. Members of the BPM staff initially do an "as is" analysis to identify current procedures, Division Standard Practices and other written policies that are applicable to a department's operation, O'Steen said.

When the "as is" analysis is completed, the BPM group begins an analysis of the department's needs and problems. "The two analyses can then be used to develop an overall picture of possible areas for administrative improvement," O'Steen explained.

Besides analyzing written procedures, interviewing is one of the main tools used in the process. "The people who work in the areas daily know where the problems are better than anyone," O'Steen said.

The BPM group presents its analysis reports and recommendations to the management of the particular department that it is assisting. The department's management

then decides what action to take on the recommendations. If requested, the BPM group will continue to work with the department while changes are being implemented.

The recommended changes may consist of simplification of tasks, improved manual techniques or automated procedures.

"There is a huge amount of administrative paperwork in a division this large. Many of our processes have been in existence for years, so there is undoubtedly a great potential for the application of new business technologies," said O'Steen.

More than a dozen Fort Worth departments and groups have contacted the BPM office for assistance to date. One of the first to take advantage of the BPM service was the Employment section, whose procedures are currently being studied by the group.

"I'm enthusiastic about the contributions the BPM group can make through the evaluation of our operation," said Jerre Yoder, Manager of Employment. "We've already pinpointed objectives for next year through a group planning exercise, so we welcome the idea of having an 'extended staff' to help us work on those and others that may be identified. We're particularly interested in streamlining practices and procedures, and identifying new ways to use electronic technologies."

Lewis Corwin Named VP - HR/Ethics Director For GD Services Co.

Lewis A. Corwin has been named Division Vice President of Human Resources and Ethics Program Director at General Dynamics Services Company.



Corwin

Corwin, who had been Director of Human Resources for the subsidiary since July 1984, has been with the company since 1957 when he joined Stromberg-Carlson, a former General Dynamics subsidiary, as a staff assistant in the Engineering Department.

Corwin held a number of increasingly responsible management positions at Stromberg-Carlson, Electronics, Quincy Shipbuilding and at Corporate Office, where he was Corporate Director of Compensation from 1982 to 1984.

A graduate of the University of Vermont, he is a former U.S. Air Force pilot.



M1A1 Demonstration. M1A1 Abrams tank is demonstrated on test track at the Lima Army Tank Plant's recent Family Day, which drew more than 12,700 company and government employees and their family members.

Tad Winiecki Designed and Built a Safer Cycle — Called a “Safercycle”

A Space Systems engineering specialist who studies how to build rockets economically is also pursuing a more earthly challenge: building a safe motorcycle.

Tad Winiecki's "safercycle" has attracted the attention

of San Diego motorists and, lately, newspaper and cycling magazine writers who like to describe its odd appearance.

The safercycle, said a Los Angeles Times writer, looks like "a bobsled on rubber wheels crossed with a torpedo."



Space Systems' Tad Winiecki and His Two-Door "Safercycle"

Winiecki doesn't mind how the writers describe his vehicle. His main concern is safety. "Some people think that something dangerous is more fun — that fear adds to pleasure," Winiecki said. "I don't agree with that." He has designed his safercycle for people who are afraid to ride a motorcycle, he said.

Winiecki set out in 1975 to build his crash-safe motorcycle within the size, weight and cost range of conventional motorcycles. Along the way, he picked up four patents for safety features that protect the rider during collisions or upsets. As the basis for his engineering model, he used a BMW R90S motorcycle and lengthened the frame six inches. He then designed a roll cage, similar to the devices used on Bonneville Salt Flats racing bikes, with a special front end to keep the bike from somersaulting in a head-on collision.

When Winiecki mounts the cycle, he steps through doors in the frame, which also serve as side stands, and straps himself into a molded restraint that attaches to the seat with a quick release mechanism. The seat in turn is part of a shock absorber system adapted from the seat belt system used in the Convair 880 airplane. If a collision occurs, the seat is designed to absorb the forces of the crash by moving forward and then back to a more protected position after first impact.

Winiecki has ridden the engineering model 13,000 miles in the last 2½ years. Some of the design goals have been reached, he said, but computer simulations or actual crash tests will be required to prove the feasibility of the safety design.

Meanwhile, he is not through with the safercycle. His next step is to finish the new fairing designed by noted motorcycle designer Craig Vetter, which will give the safercycle a more streamlined appearance. "Less like a bobsled," said Winiecki, "and more like a boat." He also presented a paper on the safercycle to the Society of Automotive Engineers in September.

He alternates between riding the safercycle and a standard BMW R75 motorcycle, preferring the safercycle at speeds over 30 mph. Because of the design of the doors, the rider sometimes can't get his legs out far enough to hold the machine up if it begins to tip over during very low speed maneuvers. If that happens, the solution is simple, Winiecki said.

"Just pull your legs inside and let it roll!" he said.

Katherine V. Parris Races Clock in Transfer of Electronics Technology

As Program Manager for Very High Speed Integrated Circuit (VHSIC) insertion programs at Fort Worth, Katherine V. Parris is responsible for expediting the transfer of a rapidly evolving electronics technology from the laboratory to actual aircraft before it is out of date.

The rapid advancement of electronics is one of the main reasons for the existence of Fort Worth's VHSIC programs and similar ones at other aerospace firms, in accordance with a Department of Defense VHSIC initiative, Parris said.

"This initiative is designed to get VHSIC technology, the next step in electronics, into practical applications in the field as quickly as possible," she said.

In the past, electronics innovations have occurred in such rapid succession that industry has had difficulty incorporating new concepts into the military systems it produces before the concepts are already outdated, she said.

Herbert F. Rogers, Vice President and Fort Worth General Manager, said that expertise in VHSIC technology will be essential to General Dynamics' ability to win future business.

Programs under Parris' direction currently involve the initial design of new F-16 and F-111 avionics systems that will exploit the advantages of very high speed integrated circuits.

"Part of the thrust is to shrink systems that are already there, to obtain more processing capability while taking up less space on the airplanes," she said. "VHSIC technology allows smaller systems to operate at faster speeds."

To illustrate the downsizing potential, Parris said one flat, six-inch square VHSIC module will have 10 times the computational power of a current, shoe box-size "black box" on an aircraft.

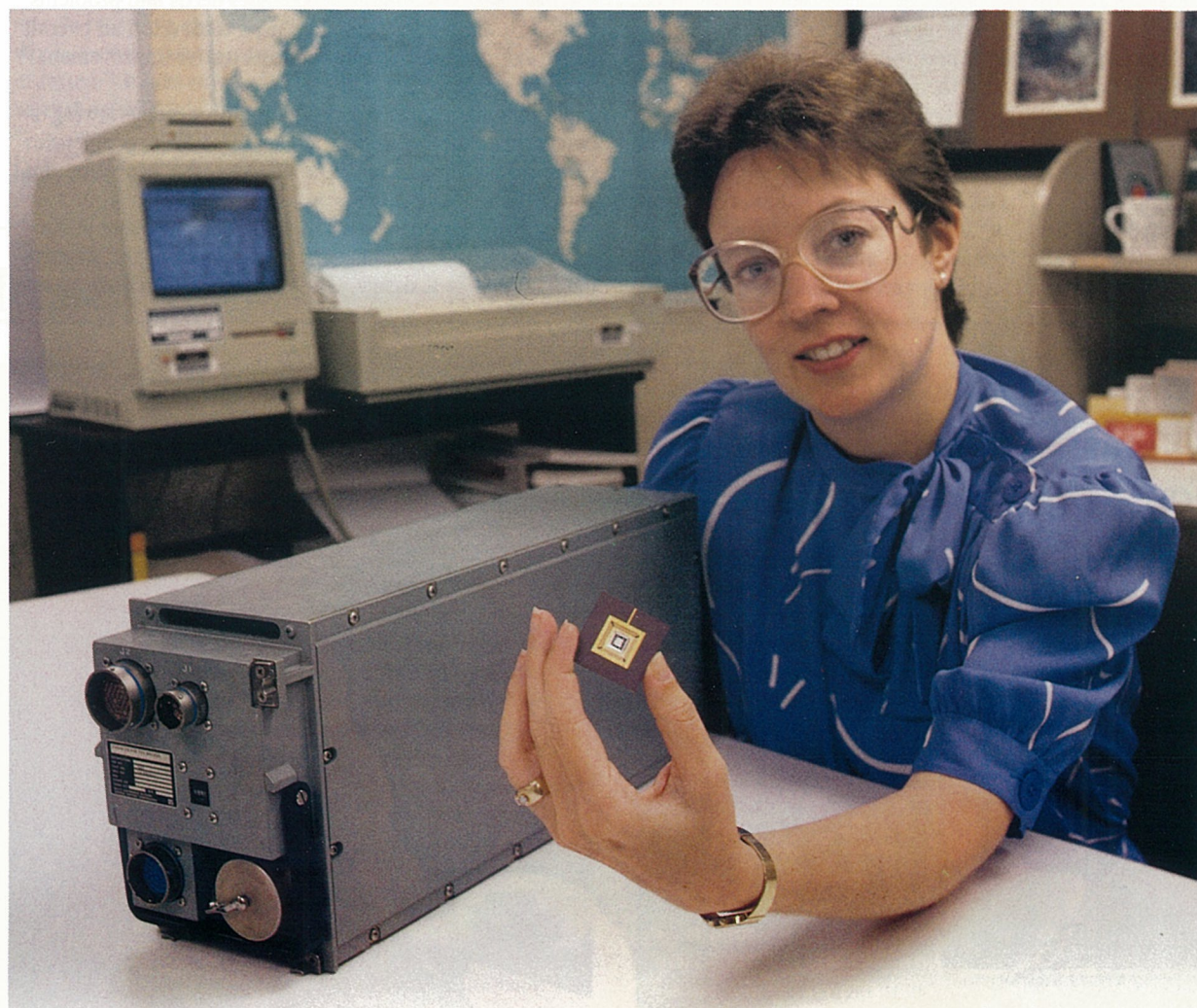
"However, the primary thrust of the program is to apply VHSIC technology in ways that increase reliability and maintainability," she said. "This technology will facilitate tremendous improvements in the supportability of aircraft systems, through extensive use of built-in tests and self-tests coupled with streamlined maintenance concepts. Government procurement agencies are placing much more emphasis on supportability and reliability, and they will continue to do so."

Parris, who holds a bachelor's degree in mathematics and philosophy from Rice University, has been with

General Dynamics for 11 years, including four as a Data Systems Division Central Center employee. She joined Fort Worth's Engineering Department seven years ago. Prior to the VHSIC assignment, she managed the design and development of simulation systems and software test

stations for use in division and USAF laboratories and for F-16 international customers.

Parris said she is looking forward to future stages of the F-16 and F-111 VHSIC programs, when the new systems will be evaluated in flight and operational tests.



Downsizing Potential. Fort Worth employee Kathy Parris displays computer chip alongside the current F-16 fire control computer. In the 1990s, a chip the size of this one could have more capacity than the "black box" computer unit, when mounted on a six-inch square circuit board with other chips of similar size. As Program Manager for Very High Speed Integrated Circuit insertion, Parris is responsible for expediting the transfer of the technology.

Special Report: 1986 Survey of Employees

SIROTA AND ALPER ASSOCIATES, Inc.

We provided all the data, explanatory text and analysis for this Special Edition.

David Sirota
David Sirota, Chairman

Dear Employees:

This special edition of the *General Dynamics World* is published to provide you with the results of the survey conducted earlier this fall. Sirota and Alper Associates, Inc., who assisted us with this survey, have told me that employee enthusiasm for this project was overwhelming. In particular, the percentage of you who took the time to write thoughtful comments about the various questions far exceeds what the consultants typically find in similar situations. I am pleased to know so many of you sincerely want to help us improve our Company.

I consider the findings shown here to be vital to us as employees. That is why we have been willing to undertake this major project and will continue to survey periodically in the years ahead to determine our progress on these issues. For well over the past year, we have worked diligently at improving our administrative practices to bring them up to the same high standards as our technical product capability. This survey continues our efforts by "taking stock" of ourselves. As with the past year's efforts, we are committed to formulating and implementing action plans together with all of you that will address the concerns and problems identified by these survey results.

This special edition represents your responses to the entire survey and analysis by the consultants. There are strengths which we want to continue to build on, but there are also problems. Some would finesse these by calling them "opportunities," but I prefer to call them problems. By admitting we have some problems we take the first step, with your help, to correct them. As you will realize, this is an enormous undertaking and some of the solutions will take time; some may not lend themselves to easy resolution, but we're committed to keeping you involved and informed as we proceed. We want your active participation in formulating our action plans, and you will have that opportunity to work with your division management team in the months ahead as these results are broken down further into your work groups.

I want to close by personally thanking each of you for taking the time to provide us with your views on the items which concern our Company.

Sincerely,

Stanley C. Pace

Stanley C. Pace

The development of the 1986 Survey of Employees, the results of which are presented in this Special Report, began with General Dynamics employees themselves.

During the summer of 1986, interviews were conducted with small groups of employees at all of General Dynamics divisions in order to learn more about the Corporation and specific employee concerns. In total, we held 50 interview sessions and spoke to approximately 500 employees.

With this enormously helpful input, we were able to construct questions about the issues that were most important to General Dynamics employees on a corporate, division, and departmental level.

In developing the survey we also sought input from the union leadership of each division as well as customers and outside consultants.

The survey included 125 questions that were asked of all employees throughout the Corporation. In addition, each division included another 40-50 questions that addressed topics of unique relevance to its employees. (This report focuses exclusively on the common 125 questions asked of all employees.) This edition of *General Dynamics World* contains the results and analysis for 76 questions asked in the corporatewide section of the survey, which we believe, are the most important items reflecting both the Corporation's key strengths and weaker areas. Questions not shown here are very similar in content to those we have presented and were included in the survey to assure the validity and reliability of the questionnaire. The additional questions are in the possession of each division survey coordinator and may be obtained by any interested employee.

Division Results To Be Included In Separate Edition

Participation in the survey was voluntary. Nonetheless, 61,974 employees surveyed responded, which represents about 70% of the employee population. All answer sheets were mailed directly to us. We computer analyzed responses to the multiple-choice questions and read through all the write-in responses.

The responses to the write-in questions showed clearly and impressively the seriousness and thoughtfulness with which employees responded to this survey. Most of the write-in items generated a response rate of 50%. Several write-in questions, however, were completed by up to 70%

of all employees taking the survey. These comments proved invaluable to our understanding of employees' views of a wide range of issues and were, likewise, helpful in our ability to present a thorough analysis to management of employee attitudes.

In conclusion, Sirota and Alper would like to express their appreciation to all General Dynamics employees, management, and union officials for their cooperation in this large and complex effort.

General Dynamics Employees Responding to Survey

Classification of Employees	Number
Management Employees	7,193
Exempt Employees (non-managers such as engineers and staff)	20,447
Non-exempt Employees (management support personnel)	6,563
Hourly Employees	22,397
Unidentified Employees	5,374
Total Employees	61,974

Sex: Across the Corporation, the survey responses indicate that 75% of General Dynamics employees are male and 25% are female. Women are most heavily represented in the non-exempt category, where they comprise 61% of employees.

Race: Of the total General Dynamics employees who took the survey, approximately 87% are Caucasian, and of the 13-14% who belong to minority groups, 5% are Black, 4% are Hispanic, and 5% identified themselves as belonging to other minority groups such as Asian or Native American.

Tenure: There is wide diversity in length of service within General Dynamics, ranging from 12% of employees who indicate they have been with General Dynamics less than a year, to 15% who have been employees for more than 20 years.

Age: Likewise, there is a wide distribution in age. Sixty-three percent of exempt employees are under age 40, while 69% of managers are over 40. Non-exempt and hourly workers are more similar in age. Roughly 60% of employees in both these groups are under 40, while 40% are over age 40.

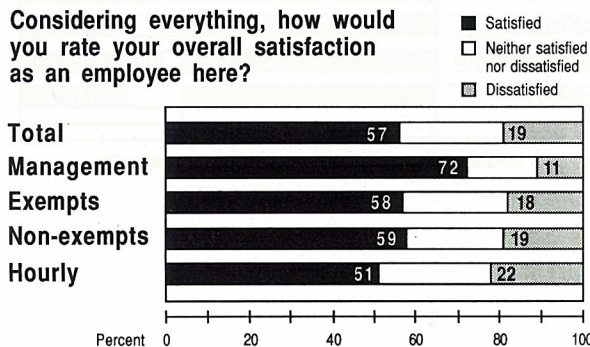
1. Overall Satisfaction

Explanation: In this section employees were asked to rate their overall level of satisfaction in working for General Dynamics and for their division. The responses provide an all-things-considered measure of employee morale and satisfaction. Later sections of this Report will explore in detail the specific factors that contribute to these general feelings.

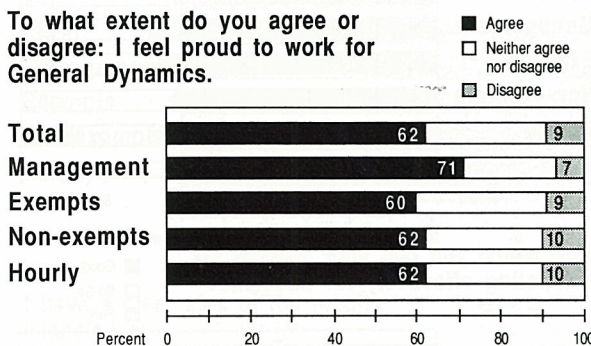
Pride is a key element in employee satisfaction. People want very much to feel proud of their company, proud of the products they manufacture, and proud of their working conditions. Since pride is so closely linked to overall satisfaction, it is discussed in this section.

It should be noted that when division ratings are presented, these ratings reflect the *collective* responses of all employees regarding their divisions. Ratings for a specific division may vary from these aggregate ratings.

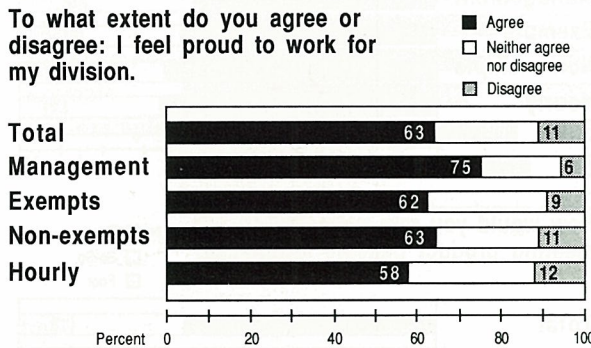
Considering everything, how would you rate your overall satisfaction as an employee here?



To what extent do you agree or disagree: I feel proud to work for General Dynamics.



To what extent do you agree or disagree: I feel proud to work for my division.



Analysis: The survey shows a moderately favorable level of overall satisfaction among General Dynamics employees. Approximately 57% of all employees report they are satisfied; 24% say they are neither satisfied nor dissatisfied, and 19% say they are dissatisfied.

As is commonly found in employee surveys, management is the most favorable of all groups. Non-management groups report fairly similar levels of satisfaction. Hourly workers, however, are somewhat less satisfied than are exempts and non-exempts.

In general, employees feel pride in working for both General Dynamics and for their division. The levels of pride employees take in General Dynamics overall and in their division is very similar: 62% of all employees agree that they feel proud to work for the Corporation and 63% feel proud to work for their division.

Again, managers are somewhat more favorable in their ratings. All other groups of employees are very close in the level of pride they report.

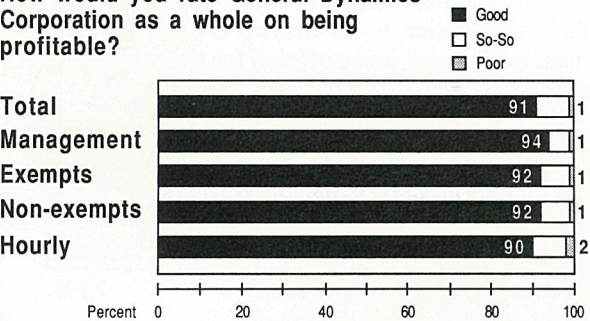
In summary, before moving on to a discussion of the specific components of overall satisfaction, the survey shows that all employee groups within General Dynamics rate their general satisfaction positively and also rate their pride in working for the Corporation and their division favorably. Managers are especially positive. Non-management groups are quite consistent in their ratings for both overall satisfaction and pride.

2. General Performance of General Dynamics

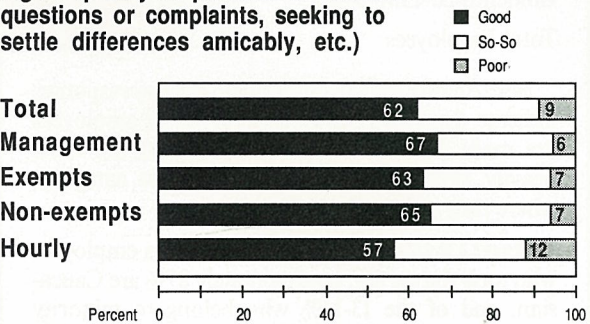
Explanation: This section deals with how employees view the performance of General Dynamics, the corporation, overall. Employees were asked to rate the Corporation's performance in five key areas: profitability, customer relations, corporate citizenship, public relations, and future business prospects.

Each of these five elements contributes to employees' overall satisfaction and their pride in the Corporation. People want to work for a corporation that they feel performs well. Among other reasons, confidence in a corporation's performance gives employees a strong sense of job security and enhances their feelings of esteem.

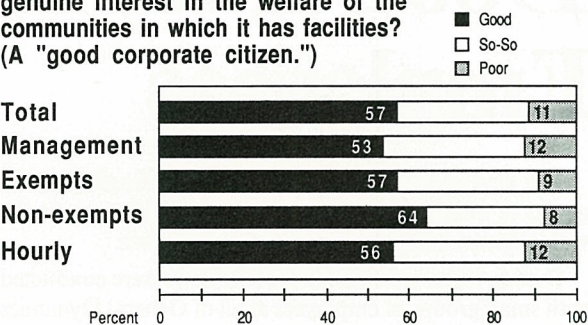
How would you rate General Dynamics Corporation as a whole on being profitable?



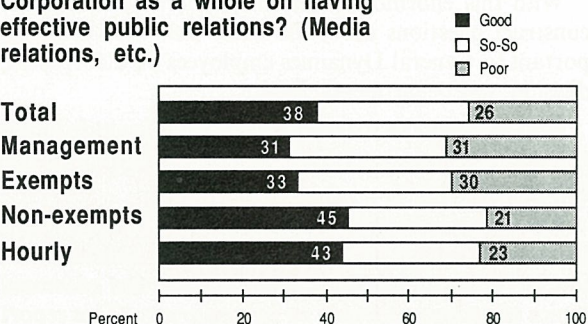
How would you rate General Dynamics Corporation as a whole on having effective customer relations? (Being sensitive to customer needs, responding as quickly as possible to customer questions or complaints, seeking to settle differences amicably, etc.)



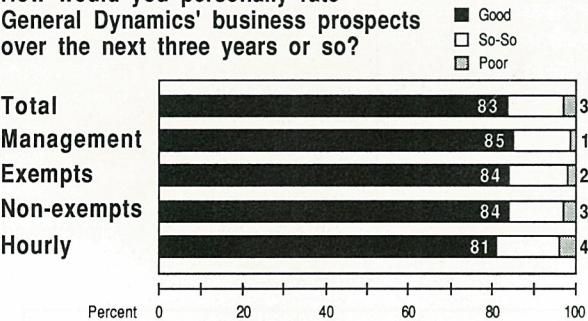
How would you rate General Dynamics Corporation as a whole on taking a genuine interest in the welfare of the communities in which it has facilities? (A "good corporate citizen.")



How would you rate General Dynamics Corporation as a whole on having effective public relations? (Media relations, etc.)



How would you personally rate General Dynamics' business prospects over the next three years or so?



Analysis: Employees are highly positive regarding the profitability of General Dynamics. At least 90% of the employees in each group rated the Corporation as "good" on being profitable.

In general, employees believe that the Corporation has effective customer relations. Over 60% of all employees believe that General Dynamics is sensitive to customer needs, responds quickly to customer queries and is effective in the amicable resolution of differences.

A majority of employees in all groups also believe that General Dynamics is a "good corporate citizen," that is, the Corporation takes a genuine interest in the welfare of the communities in which it has facilities.

Across all employee groups, there's a very strong optimism regarding the Corporation's business prospects over the next three years. More than four-fifths of all employees rate these prospects as "good." The survey shows, therefore, not only a high level of confidence in the Corporation's current profitability, but in its future profitability as well.

In general, there is a consistency among employee groups in four areas: profitability, customer relations, corporate citizenship, and business prospects. However, the view is mixed regarding public relations. Many employees rate the Corporation as "so-so" or "poor" on having effective public relations. Management and exempts are least favorable, with roughly only a third of each of these two groups rating public relations "good." Non-exempts and hourly workers are more positive; 45% and 43%, respectively, of these employees believe General Dynamics' public relations efforts are effective.

3. General Performance of Divisions

Explanation: Here the survey moves from employees' views of the performance of General Dynamics overall to their views of the performance of the specific division in which they work. Again, ratings reflect the collective responses of all employees regarding their divisions.

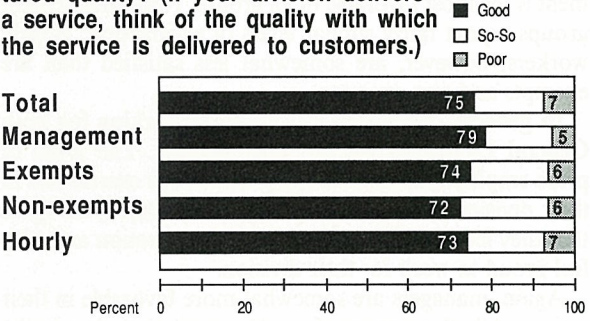
Several areas that were explored in the previous section are also explored here: profitability, customer relations, business prospects. However, several new areas are introduced in this section. Employees were asked their views regarding the quality of the products their divisions manufacture and the technical excellence of these products.

Next, employees were questioned about the ability of their divisions to compete effectively for business, and to meet product delivery schedules.

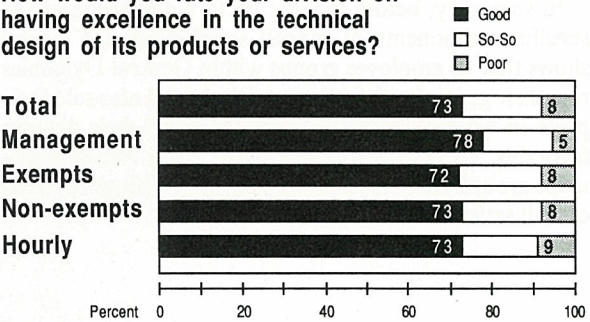
A series of questions dealt with "in-process" quality of products, the division's sense of direction, effective planning, and efficiency.

Finally, employees were asked to rate the cooperative atmosphere within their division.

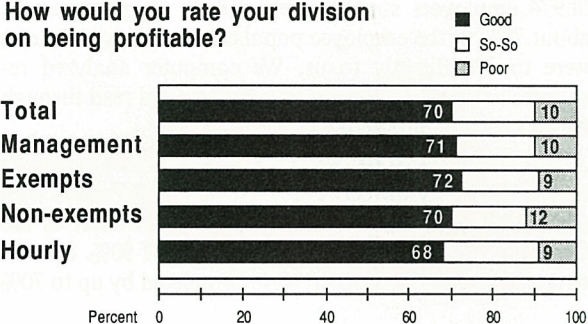
How would you rate your division on producing products of high manufactured quality? (If your division delivers a service, think of the quality with which the service is delivered to customers.)



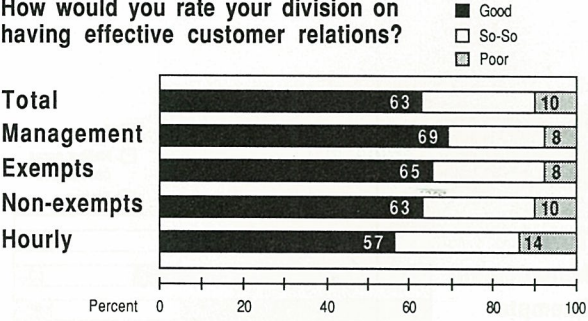
How would you rate your division on having excellence in the technical design of its products or services?



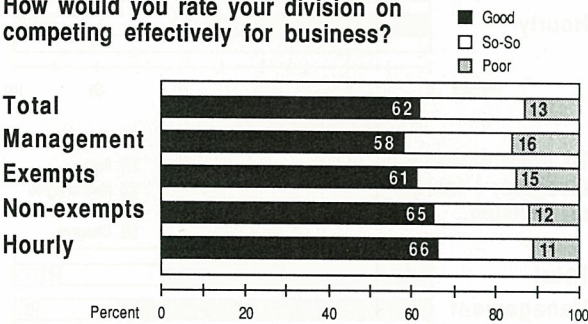
How would you rate your division on being profitable?



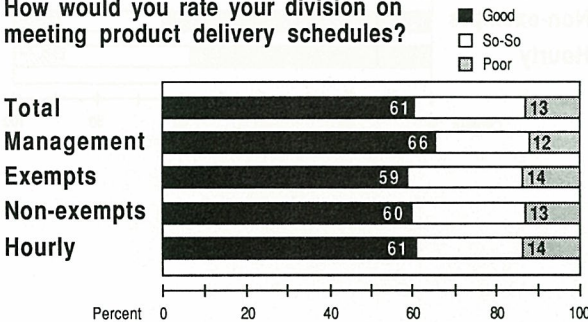
How would you rate your division on having effective customer relations?



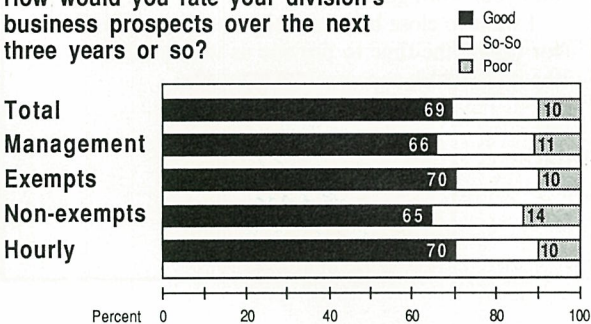
How would you rate your division on competing effectively for business?



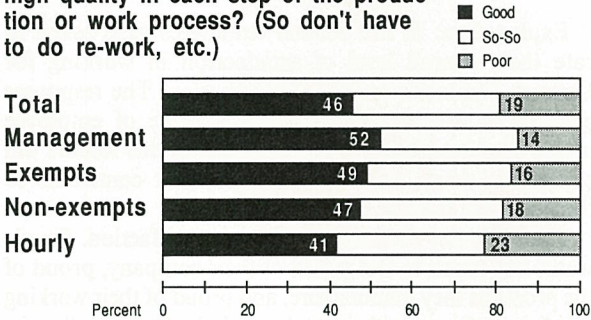
How would you rate your division on meeting product delivery schedules?



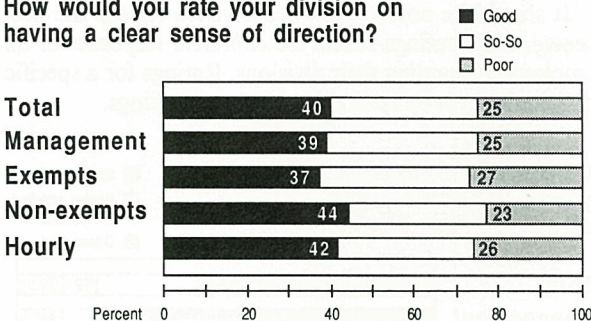
How would you rate your division's business prospects over the next three years or so?

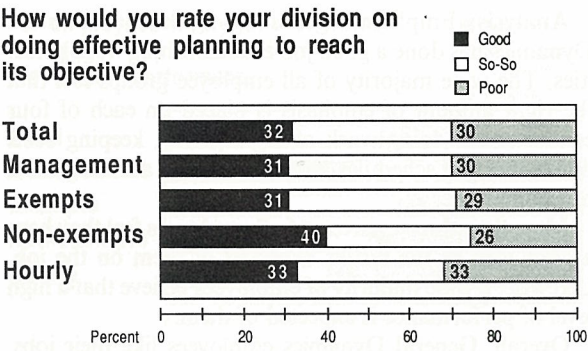


How would you rate your division on having high "in-process" quality, that is, high quality in each step of the production or work process? (So don't have to do re-work, etc.)

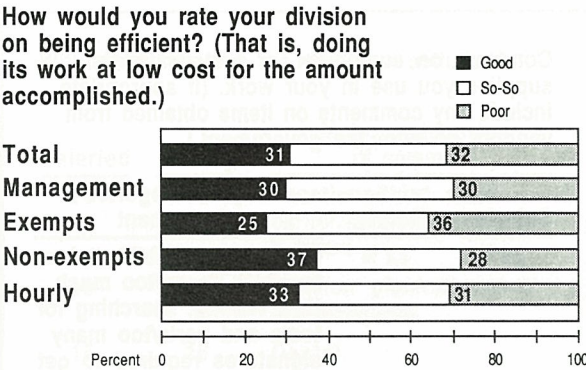


How would you rate your division on having a clear sense of direction?

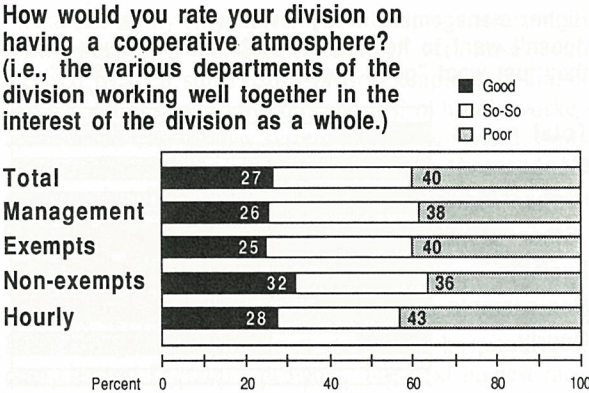




Analysis: Employees' responses regarding the performance of their division indicate areas of strength as well as areas where there are opportunities for improvement. Those areas that are rated more favorably deal with the products themselves. Employees are highly satisfied with the manufactured quality and the technical excellence of the products their division manufactures. Employees also rate the profitability of their division favorably, though not as favorably as they rate the profitability of the Corporation overall. A majority of employees say customer relations within their division are effective. Here the division ratings are almost identical to the ratings of the Corporation. Employees believe their divisions compete effectively for business. Management is somewhat less favorable in this



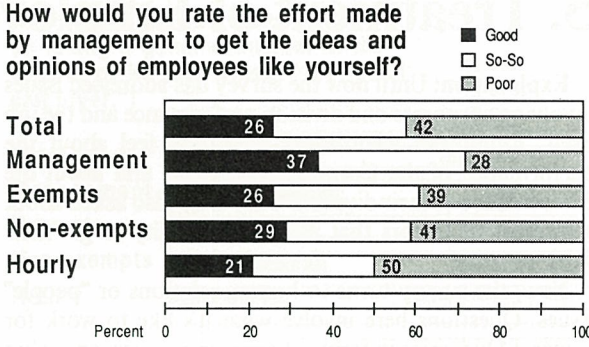
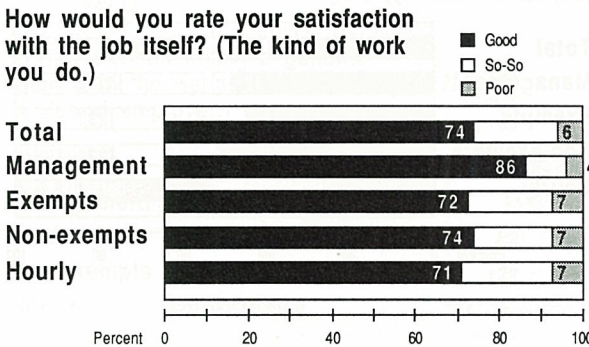
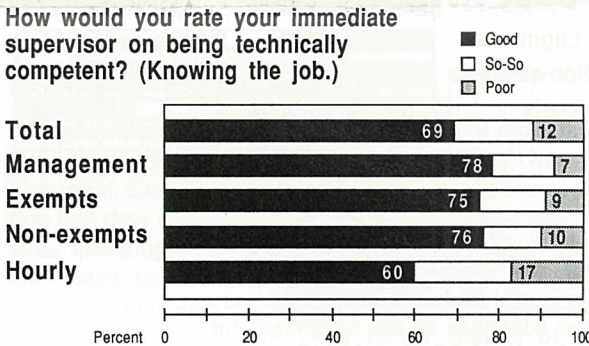
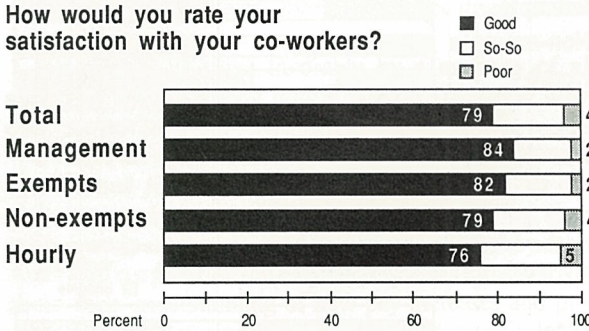
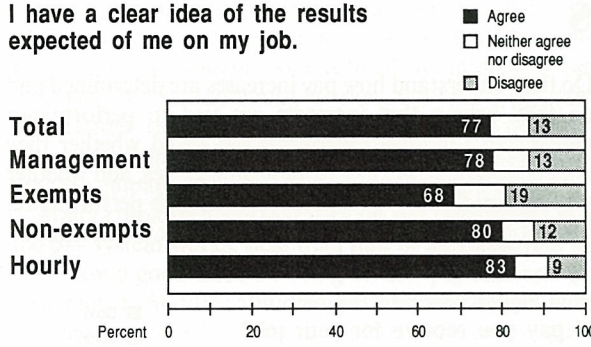
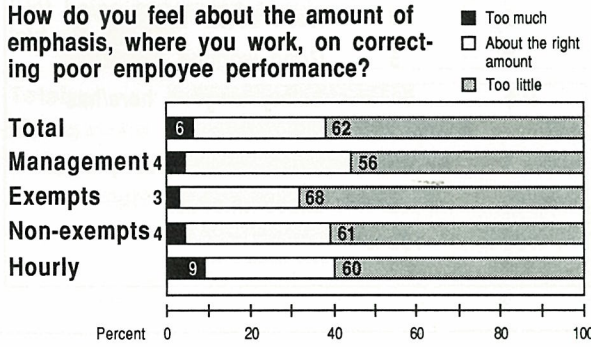
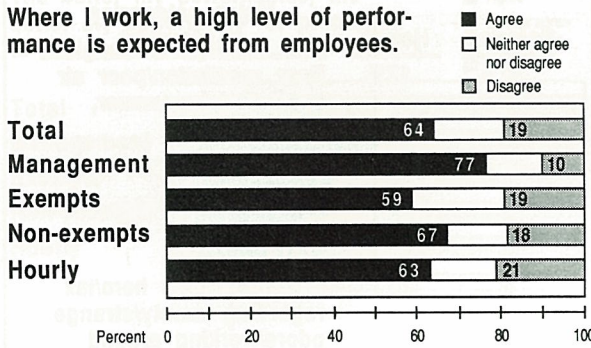
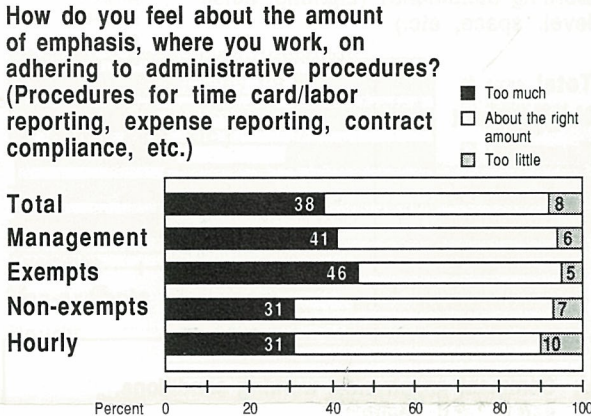
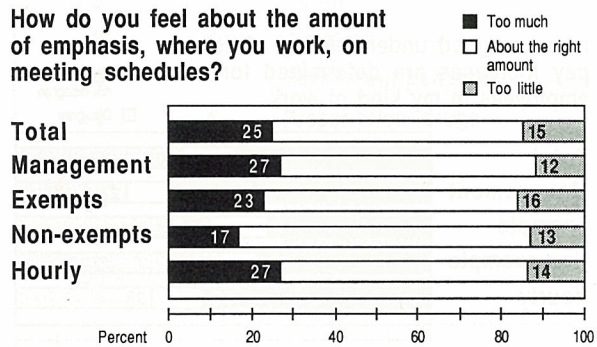
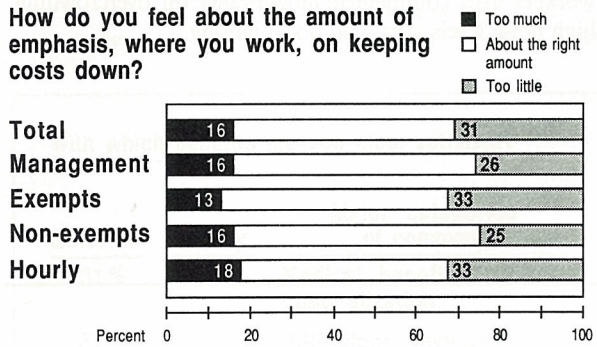
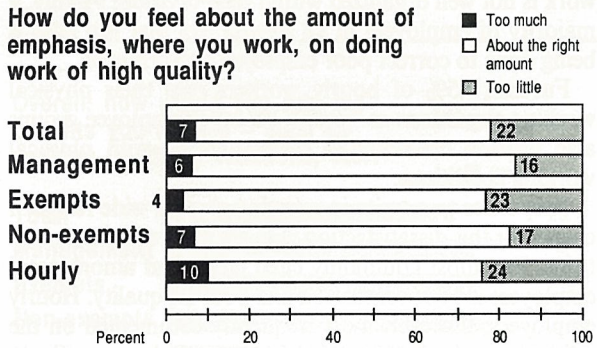
area than are non-management employees, but the differences between groups are small. Generally, employees feel that their divisions do a good job in meeting product delivery schedules. Most employees are likewise positive about the future business prospects of their division, although not as favorable as they are regarding the prospects of General Dynamics overall. "In-process" quality, or the quality of the product during its development, is rated moderately favorable. Employees provide "lukewarm" ratings of their division on having a clear sense of direction, on doing effective planning to meet its objectives, and on being efficient. While more employees are favorable than unfavorable on these issues, less than a majority express opinions that are strongly positive.

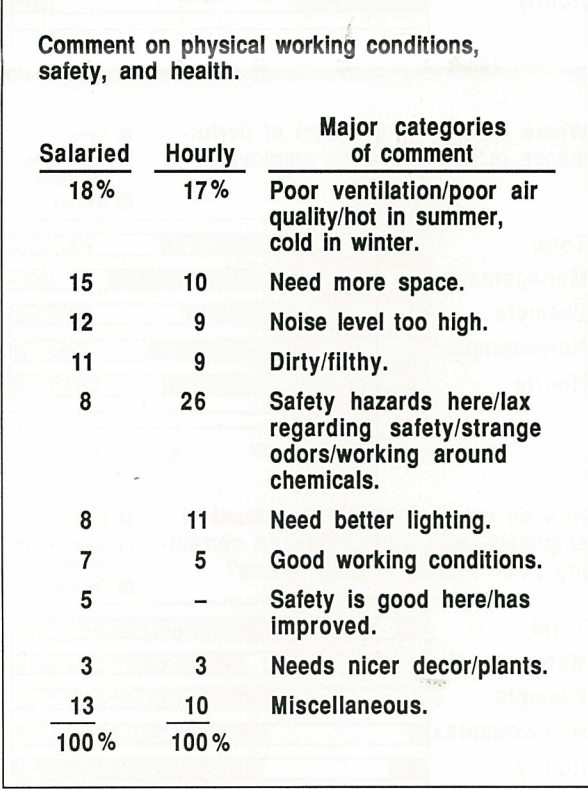
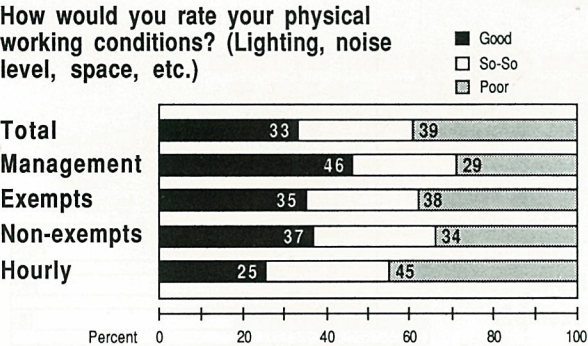
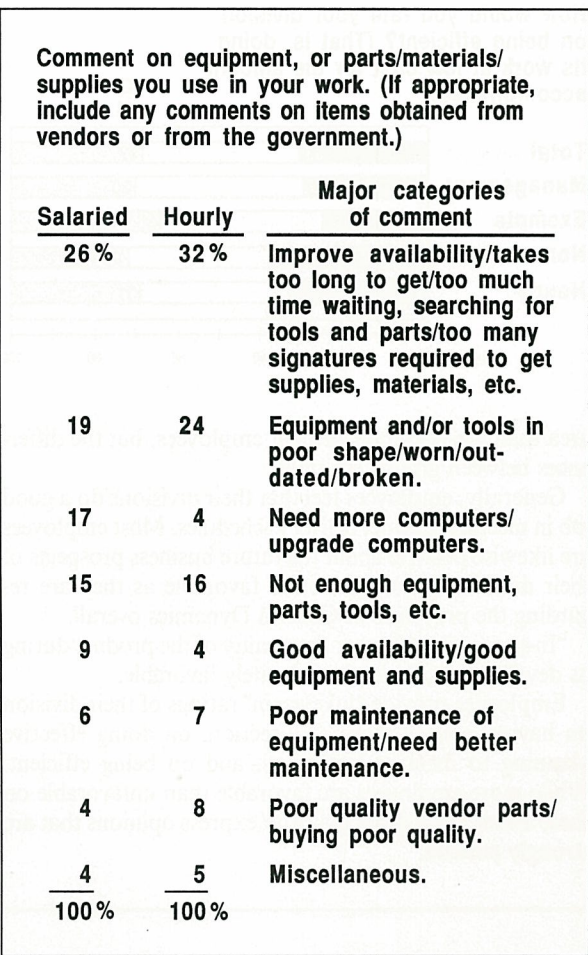
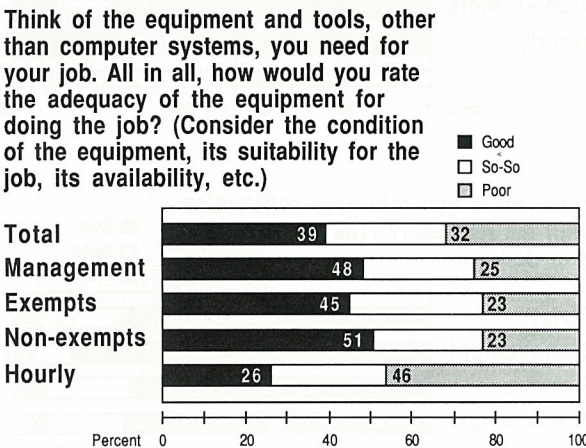
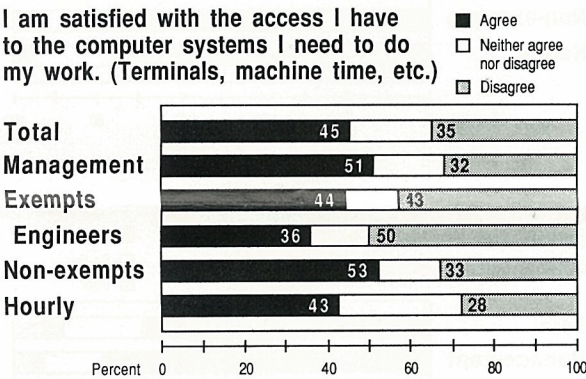
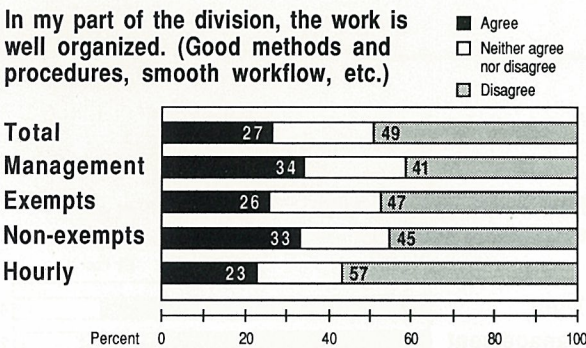
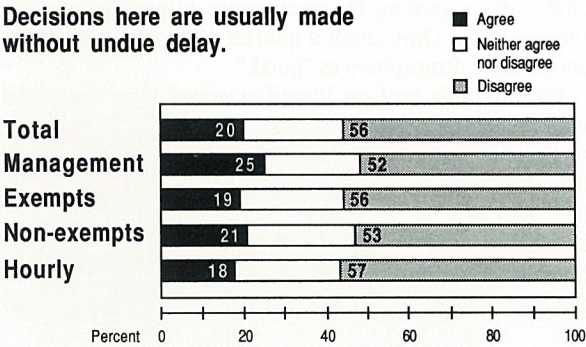
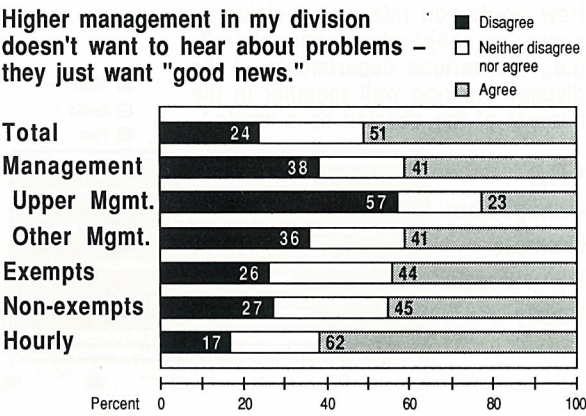


The survey shows quite unfavorable ratings among all employees regarding the cooperative atmosphere within their division. Only about a quarter of employees rate the cooperative atmosphere as "good." Overall, this section identifies some clear strengths within General Dynamics divisions. Employees are highly satisfied with the technical design and manufactured quality of their division's products. Further, they strongly believe that their division competes effectively for business and has good future prospects. However, employees are much less favorable regarding the cooperation within their division and the efficiency with which work is accomplished.

4. Ability to Get Work Done

Explanation: This area deals with the various tools, resources, programs and so forth that help employees get their work done effectively when administered well, and that interfere with effective job performance when administered poorly. What are the factors, this section asks, within General Dynamics that enhance employees' ability to get the job done, and what are the factors that inhibit employees' ability to get the job done. The issues explored here include the priorities General Dynamics establishes for its employees, communications between management and employees, relationships among co-workers, the competence of supervisors, performance expectations, equipment, physical working conditions, decision-making, and employees' satisfaction with the work itself.





Analysis: Employees generally agree that General Dynamics has done a good job in establishing work priorities. The wide majority of all employee groups feel that the right amount of emphasis is placed on each of four central areas: doing work of high quality, keeping costs down, meeting schedules, and adhering to administrative procedures.

More than three-quarters of all employees feel they have a clear idea of the results expected of them on the job. Likewise, a wide majority of employees believe that a high level of performance is expected of them.

Overall, General Dynamics employees like their jobs. Three-quarters of the employee population rate their jobs "good" and only very small percentages rate their jobs "poor." The vast majority of employees are highly pleased with their co-workers. By and large General Dynamics employees believe their supervisors are technically competent, that they "know the job."

Although these are all key areas of strength, employees also cite areas where they believe their ability to get their job done is adversely affected. For example, many employees, particularly engineers, do not feel they have the computer systems necessary to do their jobs. Hourly workers are significantly dissatisfied with their equipment and tools, other than computer systems.

In a write-in item, employees offered further insights into their dissatisfaction with equipment. Thirty-two percent of hourlies and 26% of salaried workers responding wrote that equipment and tools are not efficiently supplied. They cited poor availability, too much time spent waiting and searching for tools and parts, and too many signatures needed in order to get materials. Twenty-four percent of hourlies and 19% of salaried employees wrote that their equipment and tools are in poor shape. Further, many employees commented that they need more and better computers and more equipment parts and tools. Some workers also believe that the maintenance of equipment and the quality of vendor parts are areas where improvements can be made.

Employees are also concerned about communications between themselves and management. Most employees do not feel enough effort is made by management to get the ideas and opinions of employees. There is also a feeling by many employees that higher management in their division does not want to hear about problems. Significant percentages of management, exempts, non-exempts, and especially hourly workers believe that higher management just wants to hear good news. Only a majority of upper management itself disagrees.

A majority of employees do not believe that decisions are made on a timely basis in their division. In addition, very significant percentages of employees report that the work is not well organized within their division. Finally, a majority of employees in all groups feel that too little is being done to correct poor employee performance.

Further, 45% of hourly workers rate their physical working conditions as "poor." All other employee groups also express considerable dissatisfaction with physical working conditions.

Responses to a write-in question show a wide range of causes for this dissatisfaction with physical working conditions. The most commonly cited complaint among total employees is poor ventilation and poor air quality. Hourly employees, however, most frequently commented on the safety hazards they perceive in their work areas. Some workers also commented unfavorably on overcrowding, high noise levels, dirt, and poor lighting.

5. Treatment of Employees

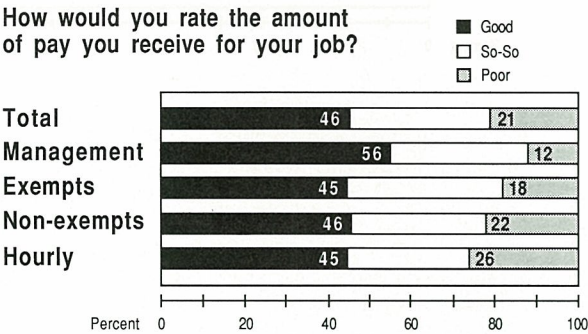
Explanation: Until now the survey has addressed issues involving corporate and division performance and the job itself. Employees were asked how they feel about the performance of the Corporation overall, and about the performance of their division. They were also asked about a number of factors that affect their ability to get their work done.

Now, the survey turns to human relations or "people" issues. Questions here involve what it's like to work for General Dynamics in terms of economic issues, and what it's like to work for General Dynamics in terms of the trust, respect and dignity employees are shown.

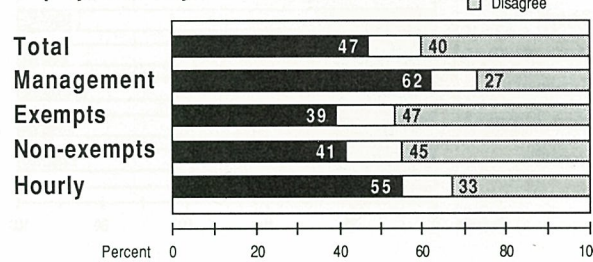
A. Economic Issues

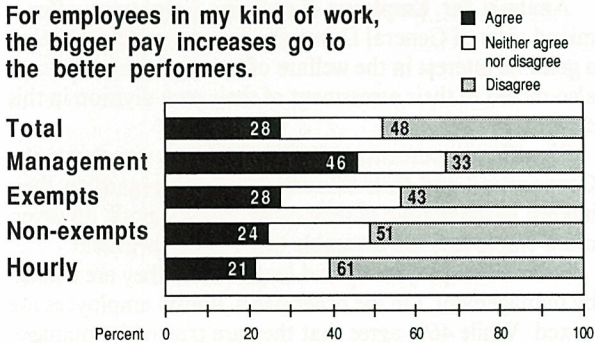
Explanation: Employees here are asked how they feel about their pay and about benefits, including pension, medical coverage, and vacations. Their views were also sought regarding their understanding of the pay system:

Do they understand how pay increases are determined and do they believe that increases are tied to performance excellence? Likewise, employees are asked whether they understand promotion policies and practices, and whether they believe these are a fair reflection of job performance. Finally, employees were asked to rate their job security.



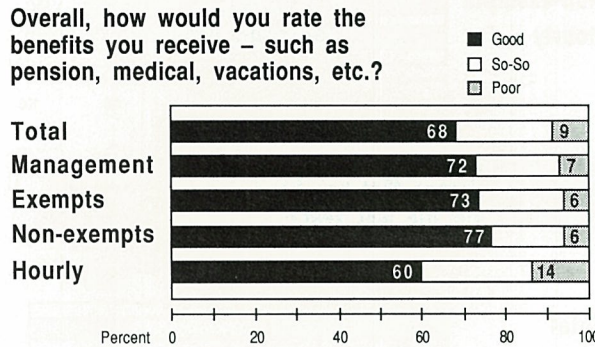
I have a good understanding of how pay increases are determined for employees in my kind of work.





Comment about pay for performance in this company.

Salaried	Hourly	Major categories of comment
21%	24%	No incentive for hard workers/no relation between pay and performance.
19	27	Favoritism/raises go to supervisor's favorites/personality contest.
13	13	Pay scale too low/raises not sufficient.
10	5	Merit pay is good idea/agree with pay for performance.
9	-	Merit pool allotment not fair/good employees bypassed.
7	5	Don't know how it's determined.
6	4	Immediate supervisor does not have enough say/higher levels have too much say.
4	-	Disparity between new and older employees/older employees get less.
-	6	Should not have wage ceiling if do good job/no incentive when reach top of scale.
-	4	Union status stifles pay for performance.
11	12	Miscellaneous.
100%	100%	

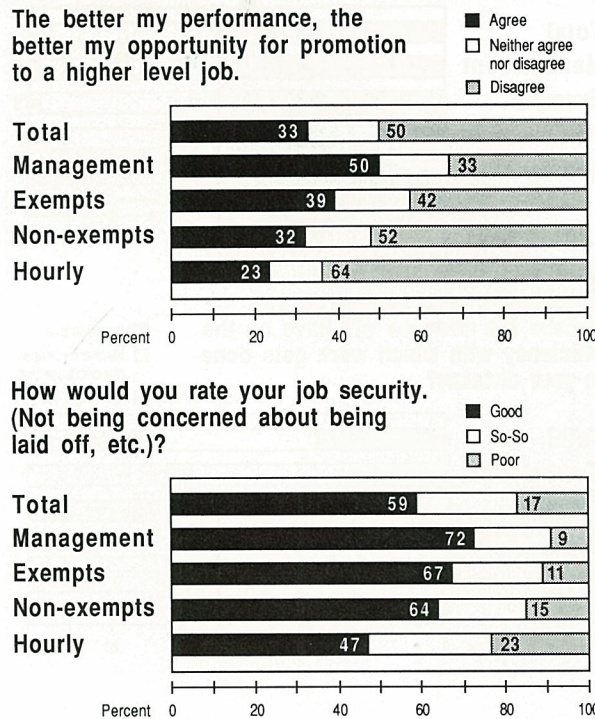
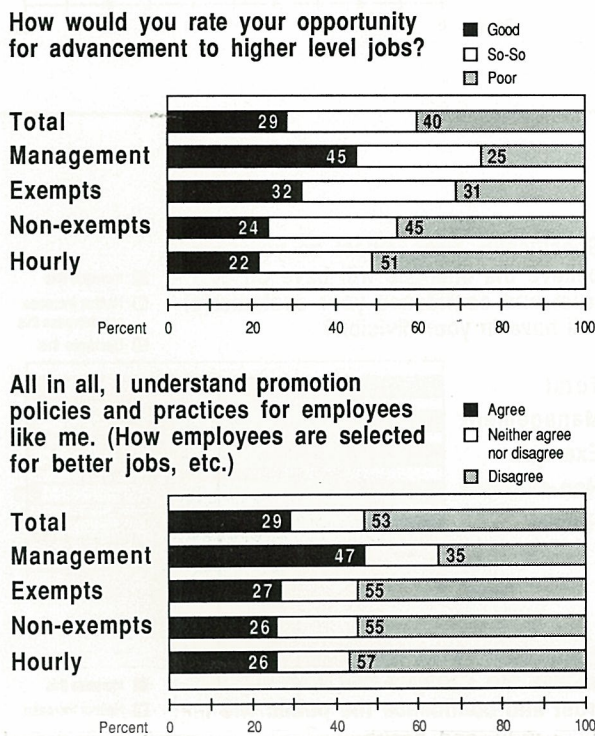


With which benefits are you most satisfied?

Salaried	Hourly	Major categories of comment
31%	43%	Medical benefits/hospitalization.
27	14	SSIP/stock savings.
9	14	Dental.
8	9	Vacation.
4	-	Retirement/pension.
4	5	Prescription drugs.
3	-	Sick leave.
2	3	Holidays.
12	12	Miscellaneous.
100%	100%	

With which benefits are you least satisfied?

Salaried	Hourly	Major categories of comment
24%	13%	Vacations/third week earlier/third week after 5 years.
18	24	Pension plan/retirement/not adequate.
15	16	Dental.
15	10	Medical/remove deductible/old plan was better.
9	7	Eye care/optical.
6	6	More SSIP/company match savings.
5	14	Sick days/sick leave.
8	10	Miscellaneous.
100%	100%	



Analysis for Economic Issues: Almost half of all General Dynamics employees are satisfied with their pay. Management is somewhat more satisfied than other employee groups. Roughly, one-fifth of all employees rate their pay "poor," and hourly workers are somewhat more dissatisfied than other groups. In general, however, General Dynamics employees rate their pay more favorably than do employees of other American corporations.

Many employees feel that they do not understand how the pay system works. Less than half of all employees say they have a good understanding of how pay increases are determined. Additionally, a significant percentage of employees do not believe that the bigger pay increases go to better performers.

In response to a write-in question in which employees were asked for their comments about pay-for-performance within General Dynamics, over half of all hourly workers and 40% of salaried workers responding wrote that they do not believe there is a relation between pay and per-

formance. Many employees wrote that pay is determined on the basis of a "personality contest," with raises being received by their supervisor's favorite employees. Thirty-two percent of salaried workers and 18% of hourly workers commented that the pay system should be revised. Some employees wrote that the pay scale is too low and that raises are insufficient. Other employees believe that a more clear-cut system of merit pay should be instituted.

Benefits are rated favorably by a wide majority of employees. In an open-ended question, 43% of hourly and 31% of salaried employees responding wrote that the benefit they are most pleased with is the hospitalization plan General Dynamics provides. The next highest rated benefit is stock savings programs, which was praised in write-in comments by 27% of salaried and 14% of hourly employees.

In another write-in item, one-fourth of salaried employees cited paid vacations as the benefit they are least pleased with. The benefit that hourly workers are least satisfied with is General Dynamics' pension plan. Roughly 15% of both hourly and salaried employees indicated dissatisfaction with the dental benefits they receive, and many hourly employees also expressed dissatisfaction with the Corporation's sick-day policy.

Advancement opportunities are not favorably rated by most employees. Management, while not highly favorable overall, is significantly more positive about their opportunities to advance to higher job levels than are other groups.

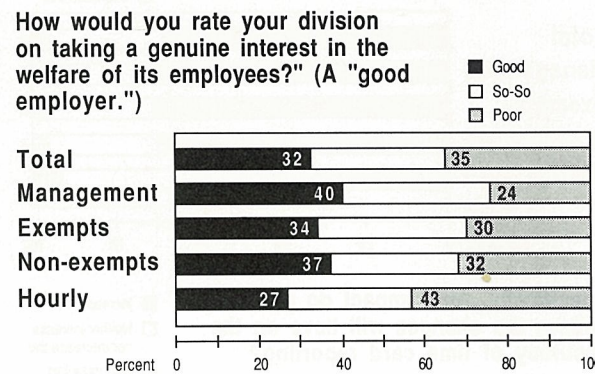
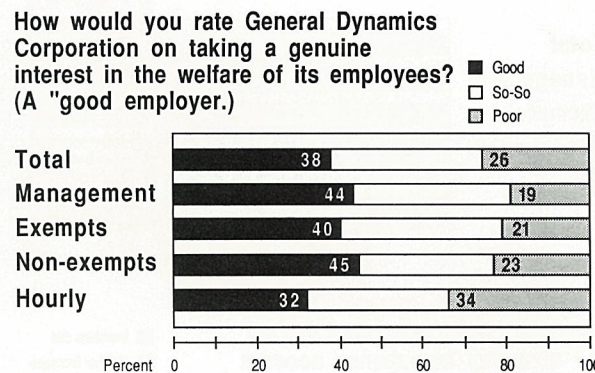
Employees, especially non-managers, are confused about promotion policies and practices that affect workers like themselves. Here, too, there is skepticism regarding the opportunity for promotion for better performing employees. Half of all managers say that the better they perform, the greater the opportunity for advancement. Among all other groups, more employees disagree than agree.

Job security is rated favorably by a majority of all employee groups, except hourly workers. Hourlies, however, are not highly unfavorable.

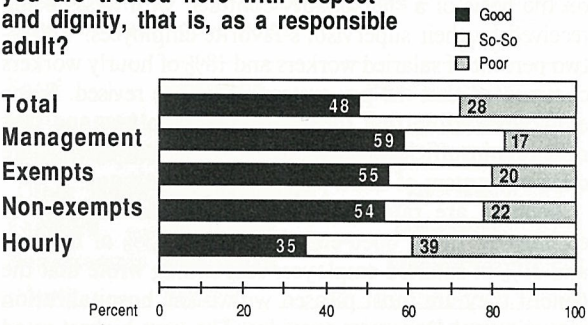
Overall, the survey shows high levels of satisfaction with benefits and job security. While General Dynamics employees are only moderately positive about their pay, there ratings compare favorably with ratings presented by other American corporations. Many employees are unfavorable about their understanding of how pay increases and promotions are determined, and also do not rate favorably the extent to which increases and promotions reflect job performance.

B. Employee Relations

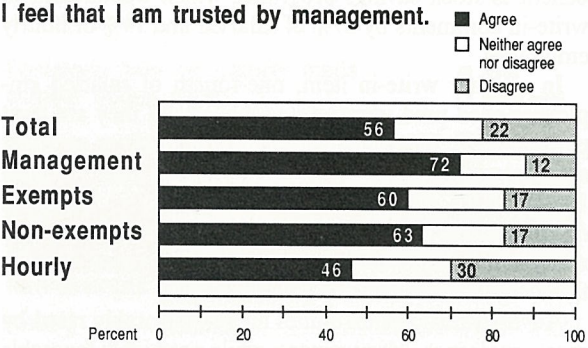
Explanation: Here the survey deals with the more personal aspects of what it's like to be an employee of General Dynamics. Employees were asked to assess the Corporation and their division on a number of "human relations" areas, including the trust and dignity with which employees are treated, the ability of employees to get a fair hearing for their complaints, and the interest General Dynamics overall and its divisions show in the welfare of its employees.



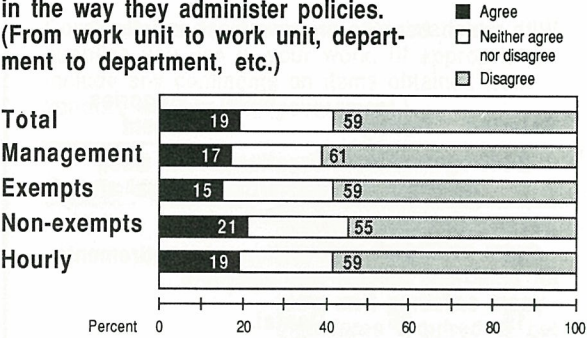
How would you rate the extent to which you are treated here with respect and dignity, that is, as a responsible adult?



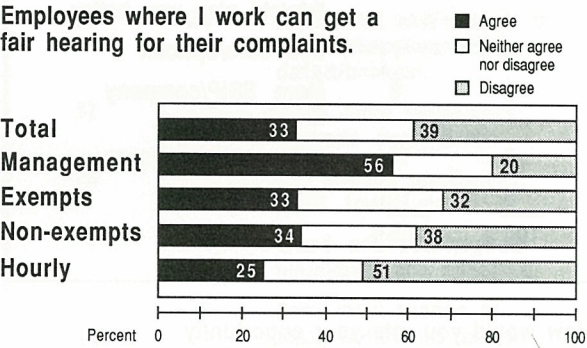
I feel that I am trusted by management.



In general, supervisors are consistent in the way they administer policies. (From work unit to work unit, department to department, etc.)



Employees where I work can get a fair hearing for their complaints.



Analysis for Employee Relations: Employees offer a mixed view of General Dynamics as a company that takes a genuine interest in the welfare of its employees. They are also mixed in their assessment of their own division in this area.

Significant percentages of employees rate both the Corporation and their division as "poor" regarding their interest in the welfare of their employees. Overall, however, more employees are favorable than are unfavorable.

Salaried employees by and large believe they are trusted by management. On the other hand, hourly employees are mixed. While 46% agree that they are trusted by management, nearly a third disagree.

A majority of all non-hourly employees feel that they are treated as responsible adults by General Dynamics, although one-fifth of all employees disagree. Here, again, hourly workers are less favorable than other groups. Differences between management and non-management salaried employees are not significant.

Management feels for the most part that employees can get a fair hearing for their complaints. Significant percentages of all other groups disagree, with hourlies dissenting in the greatest numbers.

There is more of a consensus among employees regarding the consistency with which supervisors administer policies. Large percentages in all groups do not believe that policies are administered consistently.

6. Special Issues

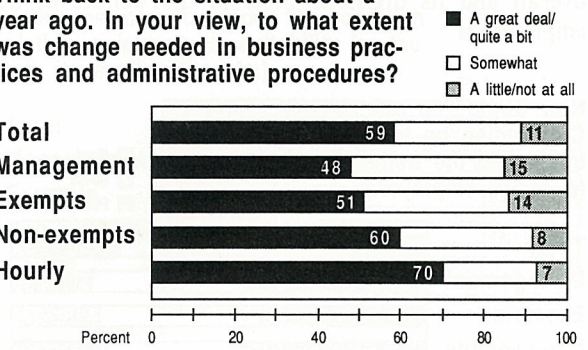
Explanation: In this special issues section, three areas of particular concern to General Dynamics are explored. First, employees were asked about the changes in business and administrative practices that have been taking place throughout the company in the last year. Second, employees were asked their views regarding the business ethics of General Dynamics and of their division. Third, employees were invited to complete a write-in item regarding potential policies and practices on drugs and drug usage by employees, and on smoking by employees within the Corporation.

A. Business Practices

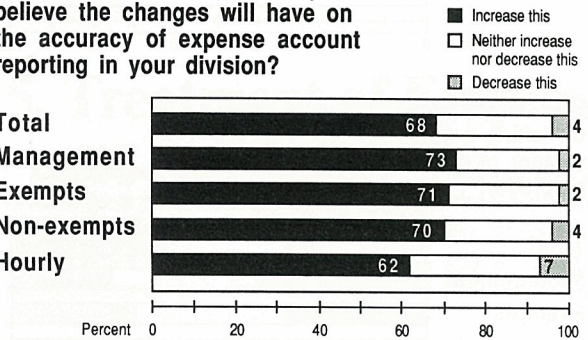
Explanation: The nine items included in this section explore in detail employees' views of the changes General Dynamics has instituted in its business practices during the last year, including changes in time card and expense account reporting.

Employees were asked whether they felt these changes were needed, whether they believe the changes will increase accuracy in expense account and time card reporting, and whether they believe the changes will increase efficiency, enhance customer confidence in their division, and strengthen the public's confidence in General Dynamics. Items within this section also explore employees' understanding of the changes that were implemented.

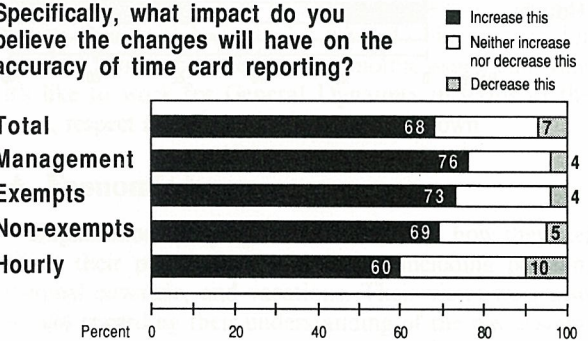
Think back to the situation about a year ago. In your view, to what extent was change needed in business practices and administrative procedures?



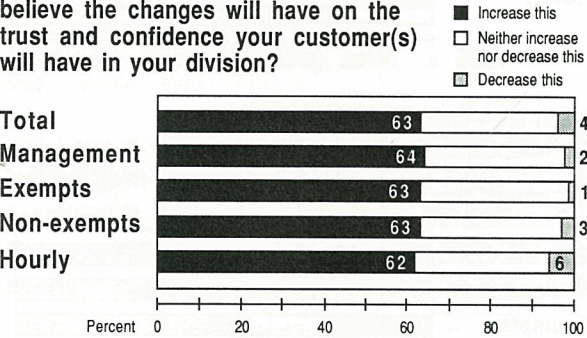
Specifically, what impact do you believe the changes will have on the accuracy of expense account reporting in your division?



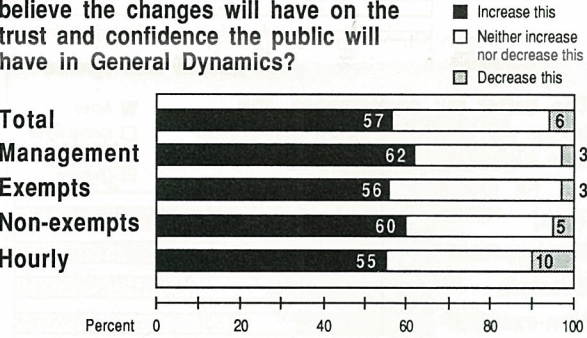
Specifically, what impact do you believe the changes will have on the accuracy of time card reporting?



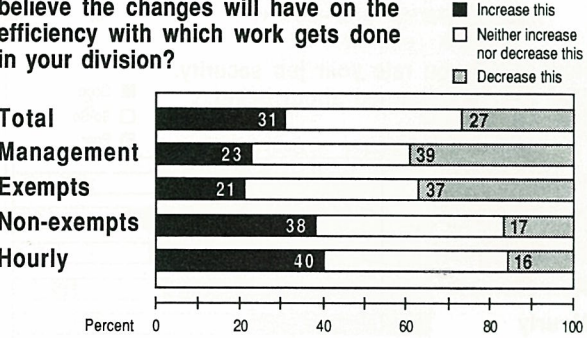
Specifically, what impact do you believe the changes will have on the trust and confidence your customer(s) will have in your division?



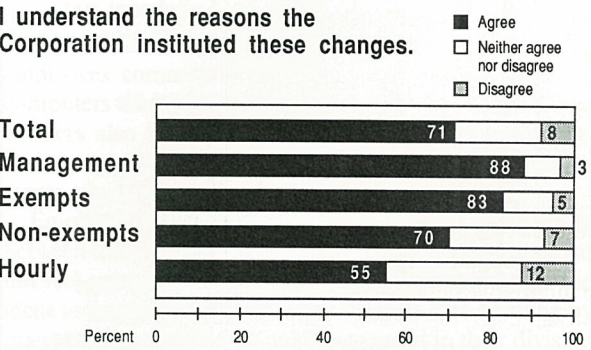
Specifically, what impact do you believe the changes will have on the trust and confidence the public will have in General Dynamics?



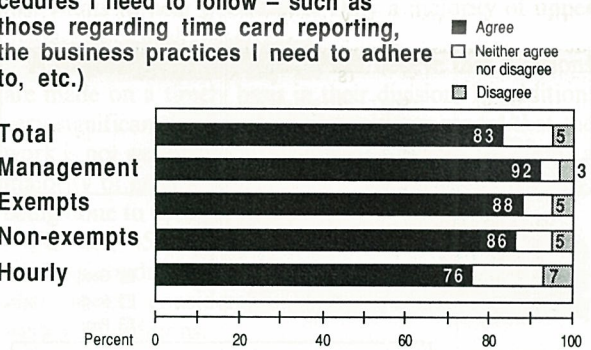
Specifically, what impact do you believe the changes will have on the efficiency with which work gets done in your division?



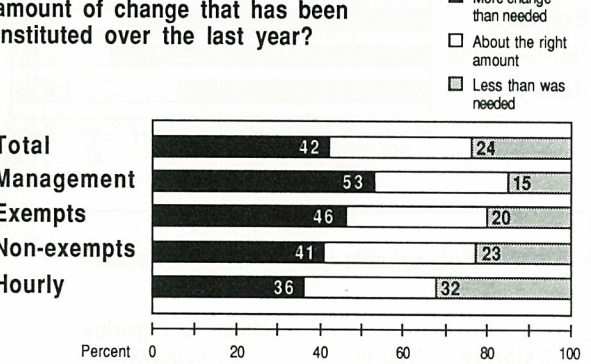
I understand the reasons the Corporation instituted these changes.



I am clear about my own responsibilities in this effort. (The administrative procedures I need to follow - such as those regarding time card reporting, the business practices I need to adhere to, etc.)



All in all, how do you feel about the amount of change that has been instituted over the last year?



Were changes needed in the way the Corporation and/or your division did business? Are the changes getting at the right issues and at the right levels?

Salaried	Hourly	Major categories of comment
39%	31%	Changes needed at higher levels/more focus should be at top levels/lower workers were not the problem/not hitting the right levels.
23	25	Changes were needed/agree with need to make changes.
15	12	Changes are hitting the right issues/changes are hitting the right levels.
13	11	Changes not getting at the right issues/not getting at all the issues/too many cosmetic changes.
6	4	Too much emphasis on time card recording.
4	4	Time card recording was too loose/had been too many mischarges.
-	3	Not getting enough employee input regarding changes.
-	10	Miscellaneous.
100%	100%	

Comment on the way the changes are being implemented in your division.

Salaried	Hourly	Major categories of comment
24 %	22 %	Being implemented well/everyone stressing the changes/trying hard.
17	9	Overdone/overkill/decreasing efficiency/getting too complex.
15	18	Made to look like employees are the problem/changes seem to be aimed only at lower levels.
13	7	Too much emphasis on time cards/time card checks out of hand.
9	22	Don't see any changes/no real change/little change has occurred.
8	10	Lack of consistency in how changes implemented/keeps changing/too much confusion.
5	4	Implemented in one-way communication/not communicated well.
3	6	Time card recording more accurate now.
6	2	Miscellaneous.
100 %	100 %	

Analysis for Business Practices: The vast majority of all employees feel that changes in business practices were necessary. They agree by a wide margin that these changes will increase the accuracy of expense account and time card reporting.

Most employees believe that the changes also will improve the confidence that customers will have in their division. Similar percentages of all groups likewise feel that these changes will enhance the trust and confidence that the public has in General Dynamics. But, significant percentages of exempts and managers are concerned that the changes will reduce the efficiency with which work gets done in their division.

Seventy percent of all employees understand the reasons the Corporation instituted these changes. Even greater numbers of workers are clear about their own responsibilities in this effort.

Although the changes are viewed quite positively by all employee groups, there is disagreement about the *amount* of change that has been implemented. Managers, in particular, feel that there was too much change. Conversely, close to a third of hourly workers feel that not enough change was implemented.

Further, in response to a write-in question, many employees indicated that they feel the changes are not getting at the right issues and at the right levels. Thirty-nine percent of salaried workers offering comments and 31% of hourlies wrote that the changes should focus more on the top levels within the Corporation and their division. The second most frequently recorded comment affirmed, however, that changes were indeed needed.

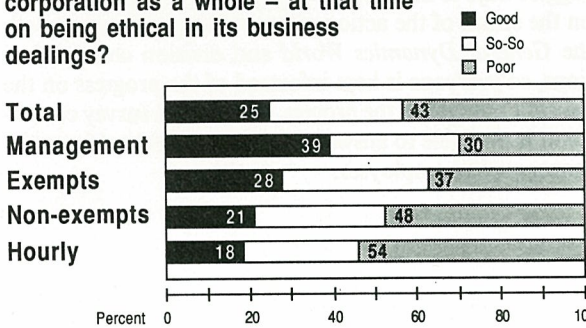
More employees wrote in that the changes were hitting the right issues than indicated otherwise. But 13% of salaried employees and 11% of hourlies responding say that the changes are not addressing the deep issues and that there are too many cosmetic changes being made.

When employees were asked in another write-in question to provide feedback on how they feel the changes are being implemented in their division, the most commonly encountered comments were favorable. Twenty-four percent of salaried workers and 22% of hourlies wrote that the changes are being implemented well. An equal number of hourly workers, however, wrote that they do not see any real changes occurring. Seventeen percent of salaried workers believe that the changes are approaching overkill, getting too complex and decreasing efficiency. Further, many hourly and salaried employees feel that the changes are unfairly aimed at the lower levels and, subsequently, make it look like the employees are the cause of the problem.

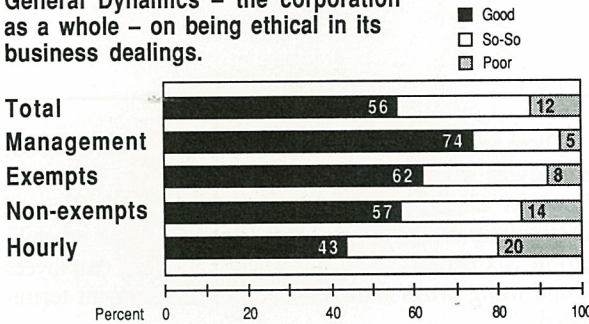
B. Business Ethics

Explanation: The six items in this special issues area explore employees' perceptions of the business ethics of General Dynamics and of their specific division. Employees were asked to compare the business ethics of General Dynamics today with its business ethics of a year ago. The effectiveness of the Hot Line and of the Ethics Awareness Workshops are also discussed in this section.

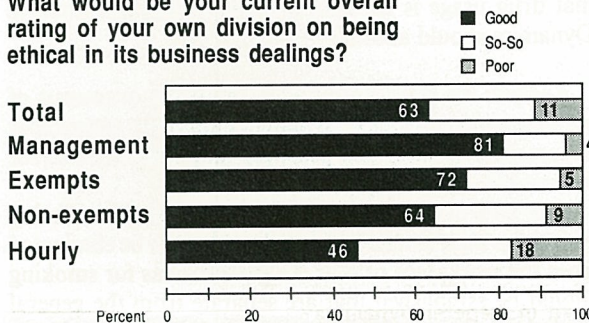
Think back to the situation about one year ago. All in all, how would you have rated General Dynamics – the corporation as a whole – at that time on being ethical in its business dealings?



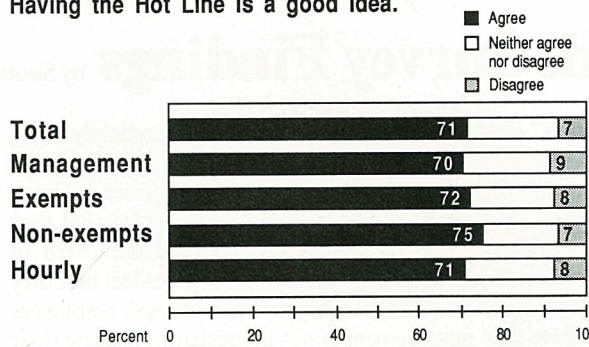
What would be your current rating of General Dynamics – the corporation as a whole – on being ethical in its business dealings.



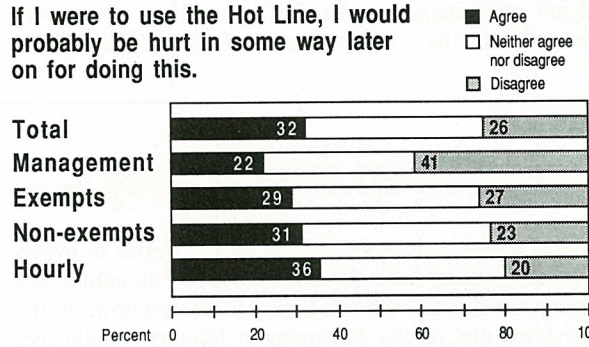
What would be your current overall rating of your own division on being ethical in its business dealings?



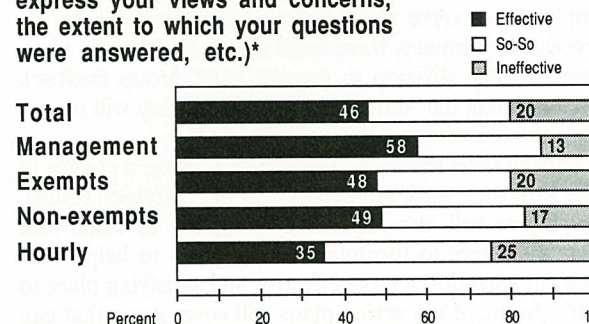
Having the Hot Line is a good idea.



If I were to use the Hot Line, I would probably be hurt in some way later on for doing this.



How would you rate the overall effectiveness of the Ethics Awareness Workshop you attended? (The clarity with which the information was presented, the opportunity you had to express your views and concerns, the extent to which your questions were answered, etc.)*



* Percent not attended an Ethics Awareness Workshop: Total - 27; Management - 11; Exempts - 20; Non-exempts - 31; Hourly - 35.

Comment on the Hot Line and the Ethics Awareness Workshops being conducted.

Salaried	Hourly	Major categories of comment
20 %	11 %	Workshops not useful/waste of time.
17	14	Workshops useful/okay/informative.
16	17	Needed at higher levels/not a problem at our levels.
10	11	Suspicious of Hot Line/don't feel it's confidential.
8	11	Hot Line a good idea.
7	4	Not enough time for discussion in Workshop/no time to ask questions.
7	8	Don't like ratting, squealing on others/big brother is watching.
6	-	No problems here/don't need it here.
5	10	Not sure anything would be done if use Hot Line.
4	14	Miscellaneous.
100 %	100 %	

Analysis for Business Ethics: Regarding business ethics, twice as many employees believe that General Dynamics is ethical in its business dealings today than believed this was true a year ago. A majority of employees likewise give their specific division a favorable rating in its business ethics. Managers and exempts are significantly more positive than are hourly workers on the subject of ethics.

There is general agreement within the Corporation that having the Hot Line is a good idea. Nonetheless, many employees are concerned that if they use the Hot Line they might be hurt later on for doing so.

Employees are moderately favorable regarding the Ethics Awareness Workshops. Management is most favorable and salaried workers are more favorable than hourly workers.

An open-ended question in which employees' comments on the Hot Line and the Ethics Awareness Workshops were solicited provide further evidence that employees are mixed regarding the effectiveness of these two efforts. In general, employees offered more feedback on the Workshops. Twenty percent of salaried workers who offered comments wrote that they believe the Workshops are not useful; however, 17% wrote that the Workshops are useful and informative. Hourly workers are, in general, more positive. Fourteen percent praised the Workshops, while 11% said the Workshops are not an effective use of time.

Roughly equal numbers of both hourly and salaried workers feel that programs such as the Workshops and Hot Line are needed at higher levels, not at their employee level. Many employees wrote in that they think the Hot Line is a good idea, but many are also concerned about the level of confidentiality it provides. Some employees also feel uncomfortable with the idea of "ratting" on co-workers and others are uncertain that appropriate action would be taken if they used the Hot Line.

C. Drugs and Smoking

Explanation: Drugs and smoking are both issues that concern General Dynamics, American corporations in general, and society at large. Therefore, the Corporation wanted employees' input and ideas regarding direction for its own internal policies.

The response to these two write-in items indicate that employees share the Corporation's concern. Higher percentages of employees contributed responses to the open-ended questions about drugs and smoking than contributed to almost any other open-ended item contained in the survey. In total, about 70% of the employees who took this survey wrote in comments on drug usage and smoking. This contrasts to an average 50% response to other write-in items.

In your view, on what should be the company's policies and practices in dealing with drug problems? (If your division has already implemented certain measures, your view of these and what additional actions – if any – you feel should be taken.)

Salaried	Hourly	Major categories of comment
25 %	23 %	People should be tested/I would accept mandatory testing.
15	13	Provide counseling/rehabilitation program/first time counsel employee.
12	10	Random drug testing unfair/no due process/no right to randomly test/against the constitution.
10	7	Test applicants.
10	13	Test only if job performance affected/only if use on the job/what's done on personal time not the company's business/only if suspected, test them.
6	6	Support any program to reduce drugs.
6	6	Terminate users.
5	5	Not sure results are fool proof/tests can be in error.
5	2	Not a problem here/not in my department, division, etc.
3	4	Treat everyone the same, salaried as well as hourly.
3	5	Current policies okay.
-	6	Miscellaneous.
100 %	100 %	

Analysis for Drugs: There is a wide divergence of opinion on what the Corporation's policies and practices should be in dealing with drug problems. About a quarter of both salaried and hourly employees who wrote in believe people should be tested for drug usage and they themselves would accept mandatory testing.

Thirteen percent of all hourly workers and 10% of salaried employees responding to this question wrote in that workers should be tested only if their job performance shows impairment or if they are suspected of using drugs on the job. What employees do during their personal time, some workers argue, is not the concern of the Corporation. Other employees suggest that job applicants be tested for use of drugs.

About a tenth of the employees who wrote in feel that random testing is unfair, an invasion of privacy, and a violation of people's civil rights. They believe that the Corporation would be wrong to institute drug tests. A small percentage of employees are concerned that drug tests are not completely accurate, and that errors could result in workers being unfairly penalized.

There are also mixed views concerning what to do about employees who are found to be using drugs. The most frequent comment on this subject favored General Dynamics providing some form of counseling or rehabilitation. Six percent of employees wrote that all employees found using drugs should have their employment terminated.

Both the quantity of the comments regarding drug use and the emotions conveyed in these comments indicate that drug usage is an issue that employees feel General Dynamics should address.

Analysis for Smoking: There is a greater consensus of opinion among General Dynamics employees concerning the smoking policies and practices they would like to see followed in their division.

Over 60% of all salaried and hourly employees offering comments believe that smoking should either be eliminated from the workplace or that designated areas for smoking should be established that are separate from the general workplace. Some employees suggested that the problems

What would you like to see the smoking policy in your division be? (If you work in a city or state where there already are laws pertaining to smoking, indicate what additional action – if any – you feel your division should take.)

Salaried	Hourly	Major categories of comment
33 %	35 %	Set up designated smoking areas/set aside separate place for smokers.
31	27	Eliminate smoking from workplace/prohibit smoking/no smoking inside facility/it's a safety and health hazard.
9	14	Current policy okay/how this division handles it is okay/leave as is.
9	4	Should be decided by work group/locally/by individual areas.
7	10	No restrictions/it's a civil right/none of company's business.
7	4	Better ventilation is needed/inadequate ventilation is the problem.
4	6	Miscellaneous.
100 %	100 %	

posed by smoking in the workplace could be solved through better ventilation.

Only 10% of employees who wrote in believe there should be no restrictions at all regarding smoking. These workers either feel that smoking is a question of individual rights and is not a Corporation matter or they report that they are not bothered by co-workers' smoking.

Many employees are satisfied with the current policies in their division regarding smoking. Some would like to see policy determined not by the Corporation or their division, but by work groups in individual work areas.

Here, too, both the quantity of write-ins and the strong feelings communicated in these write-ins indicate that smoking is a highly charged issue among General Dynamics employees.

Summary of Corporatewide Survey Findings by Sirota and Alper Associates, Inc.

The employee survey described in this Report was conducted exclusively by Sirota and Alper Associates, Inc. We have solely tabulated the results, analyzed the responses, and read the write-ins. No one within General Dynamics will see any individual's answer sheets. The results of the survey are now contained on computers and we will be destroying answer sheets. The analysis contained above was prepared by us and reflects our conclusions.

On the whole, we find many strengths and positives within General Dynamics and its divisions. Employees report that there are many areas where they believe General Dynamics performs well and where they would like to see current policies and practices continued.

Key strengths include the very positive feelings that employees have about the manufactured quality and technical design of the products made by the various General Dynamics divisions. Employees feel that General Dynamics conducts its business in a profitable manner and has effective customer relations. They are very optimistic about the future business prospects of the Corporation and the future business prospects of their divisions. They are proud to work for General Dynamics and are proud of their divisions.

Employees see significant improvement over last year in the perceived ethical business behavior of their divisions, and especially of the Corporation. They believe that the changes that were made over the last year in the Corporation's administrative practices, such as time card reporting and expense account reporting, were necessary and they understand the reasons behind these changes. Employees believe that these changes will lead to improvement in several areas, including inspiring greater trust and confidence among customers and among the general public.

General Dynamics employees feel very good about their co-workers. Supervisors are regarded as being technically competent; employees concur that they "know their job."

Benefits are rated highly. Salary is rated highly when compared with ratings given salary by employees in other American corporations. All employee groups, except hourly, rate their job security favorably.

The areas where we see key opportunities for improvement have to do with certain aspects of "getting the job

done," including having decisions made on a timely basis, the efficiency with which divisions accomplish their work, physical working conditions, and an apparently overwhelming amount of paperwork. Engineers feel that they lack the access to computer systems that they need to perform their jobs effectively. Many hourly feel that they lack adequate tools and equipment. In general, employees believe that management is not interested in hearing their ideas and opinions, and wants only to be told good news.

Very positively, employees feel that there's a high level of job performance expected of them. They have a very clear idea of the results expected of them on their jobs.

Yet, they feel strongly that not enough is done to correct poor performance and that there is insufficient reward for excellent performance in terms of salary increases and promotions. Hourly employees report a serious lack of respect for them as responsible adults.

In summary, we see an employee population proud of its Corporation, proud of the products they manufacture, and optimistic about their future. But improvements can be made in how work is done and the extent to which pay and advancement reflect performance levels. Human relations with hourly employees in particular need to be strengthened.

Next Step in Survey by Sue Shike, Project Director

This report is just the beginning of a series of events designed to feed back the survey data to all employees, from overall results (shown here) all the way down to the individual unit results. Beginning in January, similar special editions of the *General Dynamics World* will be published for each division, showing how the employees in that location felt about the same issues shown here. Employees are encouraged to retain a copy of this *General Dynamics World* edition to compare their division results to these corporatewide findings.

Meanwhile, Sirota and Alper have trained company employees to serve as facilitators throughout the survey process. In January, these facilitators will train the managers in each division to present work group feedback sessions using the "unit manager" reports they will receive from the consultants.

During these sessions, employees will have a chance to hear how their work group compares with division results. Employees will also have an opportunity to work with their managers to formulate action plans to help make their organization a more effective and satisfying place to work. Some of the action plans will cover items that can be resolved within the individual work group. Other action plans will be recommendations to higher levels of manage-

ment for addressing divisionwide or corporatewide issues. These plans will be reported up through management to the division General Manager/Subsidiary President who will report them at a meeting of company executives in the spring. Following that meeting, another special edition of *General Dynamics World* will keep everyone informed of the status of the action plans.

Throughout the feedback/action planning phase of the survey, all employees are encouraged to continue to express the same level of enthusiasm demonstrated during the administration of the survey questionnaire this fall. Employees' help is needed to define the problems and suggest ways to improve the organization. Periodic reports on the status of the action plans will be published in both the *General Dynamics World* and division communications, so everyone is kept informed of the progress on the issues. Throughout the process, the division survey coordinator is available to answer questions and otherwise assist managers and employees.



Season's Greetings



Dear Employees:

Thanks to your dedication, hard work and extra effort, 1986 has been a year of great progress and accomplishment for our company. We are stronger in every way, and we have demonstrated that we have the resolve to continue to strive for new levels of excellence in all aspects of our performance, in administration as well as engineering and manufacturing.

I have greatly appreciated your strong support during my first full year on the General Dynamics team. It was a year filled with challenge and opportunity, and I believe we have every reason to take great pride in how we responded. I ask for your continued cooperation in 1987.

One of my goals, as you know, is to understand your concerns and act on your recommendations to bring about improvements in how we manage the company and motivate and recognize our people. The Corporatewide Employee Survey was the first step in this long-term program, and you have

my word that your constructive comments and criticisms will be given serious consideration. You will be hearing a great deal more on this subject, beginning on December 19th, with the distribution of the Corporatewide Employee Survey results.

It is a great privilege to be associated with you. We have a great company today. We can become a greater company in the years ahead. Again, I thank you for your support. I would like to extend to each of you and your families my Holiday Greetings and my wish that you have a Happy and Healthy New Year.

GENERAL DYNAMICS

World

Volume 16 Number 12 December 1986

Thousands of Schools Answer GD's Offer Of Free Videotapes

General Dynamics is receiving tremendous response to its offer to provide free videocassettes of two company-sponsored Public Television specials — "Winston Churchill" and "Ike" — to 25,500 American schools.

The offer was made in October in mailings to the principals of all U.S. junior and senior high schools with enrollments of more than 200 students. Each mailing included a postpaid order card, study guides for the two programs and promotional posters for use in classrooms.

More than 8,000 requests for the videotapes have been received to date from schools throughout the country. Based on the present number of responses, it is estimated that the programs will be made available for viewing by more than six million students.

Many of the educators have sent the company notes and letters of gratitude along with their requests for videotapes.

"Our history teachers have expressed a strong interest in these two programs and feel they would be valuable additions to our collection," wrote Betty Blanchard, a Media Specialist at McGill-Toolen High School in Mobile, Ala. "Providing these tapes at no cost to schools is a wonderful service, for which many systems like ours are especially grateful."

"As Program Supervisor of Social Studies . . . I felt a strong responsibility to take the time to properly thank you and your company for the generous offer," wrote Stephen J. Conroy of the Stoneham Public Schools in Stoneham, Mass.

(Continued on Page 2)

Employee Survey Results In Special Edition

General Dynamics employees will receive the results of the Corporatewide Employee Survey in a special edition of General Dynamics World to be distributed at the divisions and other company locations on Dec. 19th.

This special edition of General Dynamics World will contain a consolidated report of how employees at all

company locations answered the survey questions.

Beginning in January, employees at each major division will receive a special supplement to the General Dynamics World containing responses for the questions specific to their location.



Employee Survey Results. Consultant David Sirota, center, presents results of the Corporatewide Employee Survey to officers and division general managers of General Dynamics at a meeting on Nov. 18th in St. Louis. Sirota & Alper, a New York firm, prepared the survey and compiled the results.

F-16 Reliability Earns USAF Incentive Fee

The U.S. Air Force recently notified Fort Worth that General Dynamics and two F-16C/D avionics suppliers will share a \$7.3 million incentive fee resulting from the excellent performance of F-16C/D avionics components during reliability measurements at Luke AFB, Ariz., and Shaw AFB, S.C.

As F-16 prime contractor and manufacturer of the Fighting Falcon's advanced central interface unit, Fort Worth will receive incentive fees totaling \$4,320,000. Delco will receive \$1,635,000, as manufacturer of the aircraft's expanded fire control computer, and Sperry, manufacturer of the multifunction display and programmable display generator, will receive \$1,389,500.

More than 18,000 flight hours were accumulated on the initial F-16C/Ds delivered to the two bases during the measurement period, June 1985 through February 1986. The measurement criteria — the mean time between demand (MTBD) rates — for two of the four avionics components bettered contract targets by a factor of two during the period. The rates for the other two components also measured well over target values, said Ron K. Thompson, Fort Worth's Element Manager for Specialty Engineering on the F-16C/D program.

Mean time between demand is a measurement representing the average number of flight hours logged on an aircraft between equipment removals due to suspected failures. These removals require a spare from the logistics supply system. For example, the advanced central interface units on the Luke AFB and Shaw AFB F-16C/Ds had a measured MTBD of 207 hours during the award period, compared to a target of 126.

The incentive fees will be paid under a supplemental contract agreement providing for two reliability performance measurements. Fort Worth and the suppliers could

(Continued on Page 2)



Season for Giving. Employees at Space Systems' Eastern Test Range in Florida wrap presents that will be given to needy children from their area this Christmas. This is the 15th year that Eastern Test Range employees have assisted local families with clothes, food and utility bills at Christmas. Employees at many other company facilities nationwide have been involved in similar efforts this month.

Internal Audit Staff Meets to Discuss New Roles and Plans for 1987

The first conference of the members of General Dynamics' Internal Audit Staff was held in late October at a site near the corporate headquarters in St. Louis. The conference was held to provide the audit staff with an understanding of the increased expectations of the Department of Defense in self-audit by contractors, professional development training related to new internal audit procedures and contract compliance auditing and the specific audit plans for 1987.

In addressing the group, Stanley C. Pace, General Dynamics Chairman and Chief Executive Officer, said, "We expect Internal Audit to have in place an adequate mechanism to monitor and control compliance with all contract requirements. To accomplish so broad an objective, we are committed to expanding the audit responsibility far beyond the traditional role of Corporate Internal Audit Department."

In identifying those new responsibilities, Pace said, "In the past, Internal Audit has concentrated on performing evaluations of internal financial and operating systems and controls. The focus of most of these audits was on business systems and functions. Your new areas, including audits of subcontractors and of financial manpower, will integrate your work with that of other General Dynamics programs . . ." including the Management Effectiveness Program and the Contract Compliance Review Program.

Standley H. Hoch, Executive Vice President, Finance, told the Internal Audit staff, "We expect you to serve in an oversight role, to provide information about the adequacy and effectiveness of our systems of internal controls and the quality of their performance and to assist management in the effective discharge of their responsibilities."

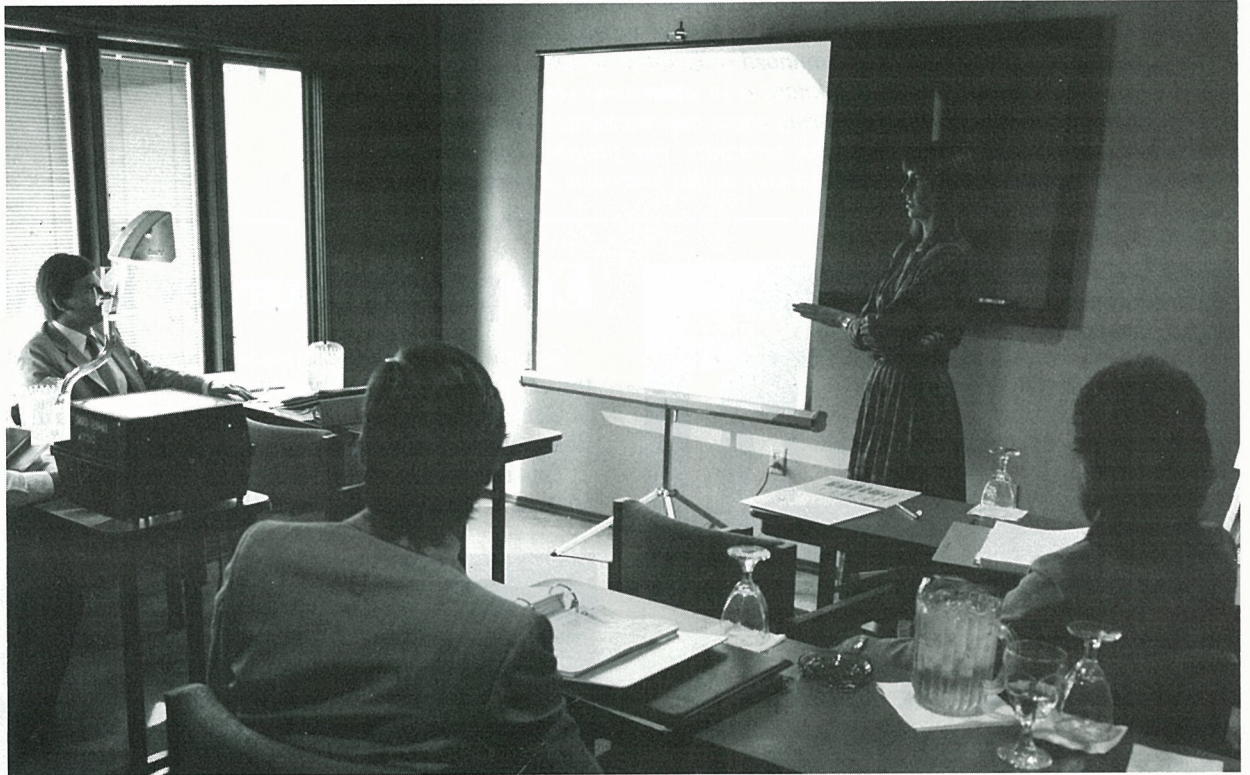
The three-day conference included a number of working sessions and seminars devoted to new audit approaches as well as the changing requirements of contract compliance from the military services and the Department of Defense.

Addressing the conference, Oliver C. Boileau, General Dynamics President, said, "The Defense Industry operates in a tangle of confusing, conflicting and at times contradictory regulations. The Defense Industry is being watched very closely by the government to see how we respond to the new challenges we face."

"General Dynamics has been a leader in the Defense Industry, providing the finest hardware and systems for

our military and naval forces. The continuing review of our operations, policies and practices by professional auditors will help insure that we install the finest management and control systems in the industry."

The conference marked the first time the members of the Internal Audit staff, which currently comprises 73 professionals located at nine sites across the country, had met together at one time.



Janice Greene, Manager of Internal Audit-San Diego, leads training session

Many Schools Answer Videotape Offer

(Continued from Page 1)

"I have seen (the programs) and I am excited that we can get materials of this quality from you. Your corporate generosity is very much appreciated," wrote Stephen R. Roberts, Principal of Riverton High School in Riverton, Wyoming.

"You are to be commended for your part in perpetuating the qualities of leadership and courage as well as truth. Thank you for thinking of the future," wrote Sister Blanche Gothia, O.P., Media Coordinator for Saint Agnes Academy in Houston.

Other educators have praised the quality of the classroom study guides, writing that they are anxious to use them in conjunction with the videotapes.

The teaching materials relate the lives of the two world leaders to international events during the years spanning Churchill's birth in 1874 until Eisenhower's death in 1969.

"We take great pride in making these very high-quality programs available to the nation's educational system," said Stanley C. Pace, Chairman and Chief Executive Officer. "We believe that they will be of considerable value in the study of 20th century history."

Pace said that schools are encouraged to duplicate both the tapes and the study materials to suit their needs.

"Winston Churchill" with Robert Hardy premiered on the Public Broadcasting System network on June 18th, and "Ike" with E.G. Marshall was aired on PBS stations October 15th. General Dynamics underwrote the production and broadcasting of the shows.

Electric Boat Engineer Cited by Welding Society

Electric Boat Senior Staff Engineer James Cameron has received the prestigious Comfort A. Adams Lecture Award given by the American Welding Society.

The award, an honorarium and a certificate that honors the society's founder and first president, is presented each year to "an outstanding scientist or engineer for a lecture presenting some new and distinctive development in the field of welding."

Cameron's lecture, given at the group's annual meeting recently in Atlanta, Ga., was entitled "Productivity and Quality In Shipbuilding" and examined the costs of welding and evaluating those costs with computers.

F-16 Reliability Praised

(Continued from Page 1)

become eligible to receive additional incentive fees totaling \$9 million following the second performance measurement, which is scheduled for September 1988 through February 1989. Targets for MTBD will be somewhat higher during the second period, which is to take place after the avionics equipment has reached production maturity.

In a related action, Maj. Gen. Robert D. Eaglet, Director of the USAF Air Systems Division's F-16 System Program Office, praised the reliability and maintainability of F-16C/D aircraft recently in discussing the second multiyear contract for F-16 production. He noted that the current mission capable rate for the F-16C/D stands at more than 90 percent, well above the Tactical Air Command's standard rate of 85 percent.



President's MEP Award. General Dynamics President Oliver C. Boileau, left, congratulates Don H. Huckaby, center, Data Systems Division Vice President and Central Center Director, for the Central Center's receipt of the President's Award for having the best overall performance and ratings in 1986 Management Effectiveness Program (MEP) reviews. At right is A. H. Hall, Vice President and Data Systems Division General Manager. The MEP process, conducted by MEP review teams, is a means of conducting internal management reviews of functional and administrative areas of the company's operations.

GENERAL DYNAMICS

World

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Jack Isabel, Jerry Littman, Evelyn Murphy,
Jack Price, Jim Reyburn, Tom Rule, Joe Stout,
Z. Joe Thornton

FW Departments Raise Donations for Charity With Holiday Parties

Two of Fort Worth's largest functional organizations are using holiday social activities as opportunities to raise funds for worthy causes this year.

The Engineering Department has set a goal of raising \$2,000 with its 1986 Christmas party to benefit four needy families. In 1985, two families received \$500 each in proceeds from the department's party. The department will also donate \$600, the proceeds from its 1986 picnic, to a charitable cause before Christmas.

The Quality Assurance Department will donate receipts from its Christmas party to an Easter Seals rehabilitation program for head injury victims this year. Last year, the department donated \$350 raised from its Christmas party to the Easter Seals Society for Crippled Children.

Company-Sponsored Race Held to Raise Funds For Heart Association

General Dynamics divisions in San Diego recently sponsored a 10 Kilometer race to raise funds for the local chapter of the American Heart Association.

A total of 92 running teams from businesses, government agencies and military organizations in the area participated in the race, titled the "Swiftest Business in San Diego."

Nine General Dynamics teams won in various race categories, including the overall fastest team slot.

Land Systems Cyclist Aids In Burn Center Campaign

Herbert N. Rose, 58-year-old program specialist from Land Systems, recently rode his lightweight bicycle 120 miles to raise more than \$700 for the Hurley Burn Center in Flint, Mich.

Rose, of Detroit Arsenal Tank Plant Manufacturing Programs, took part in Biking for Burns, in which cyclists help burn centers across Michigan by soliciting per mile pledges and then riding all or part of the day. Approximately 1,080 bicyclists participated, and more than \$79,000 was pledged.

"The money was donated through the generosity of the people with whom I work and friends in my home town," he said. "I just had the fun of riding the bike."

Quonset Point Ballplayers Raise Cash for State Fete

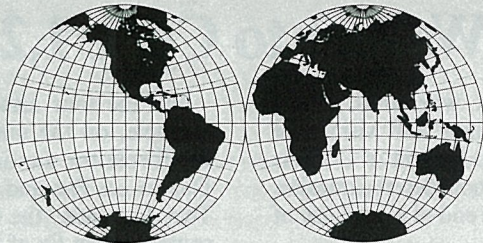
The Electric Boat Major Industrial Team, a softball team made up of Quonset Point, R.I., facility employees, recently raised \$350 for RI 350, the celebration marking Rhode Island's 350th anniversary.

The team, part of the Providence Softball League, raised the money at a steak fry attended by more than 225 persons. The team's check was presented to William Bennett, Division Vice President and Quonset Point General Manager, who also is a member of the RI 350 fund-raising committee.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Oct. 1984	Oct. 1985	Oct. 1986
Salaried			
Government Bonds	9.1%	15.0%	12.5%
Diversified Portfolio	4.2%	22.6%	37.7%
Fixed Income	12.3%	12.4%	12.0%
Hourly			
Government Bonds	9.0%	15.0%	11.9%
Diversified Portfolio	3.6%	22.2%	38.3%
Fixed Income*	N/A	12.4%	12.0%
GD Stock Closing Price	\$64.25	\$62.37	\$72.75

* Fixed Income effective 6/30/86



Around the World

CHQ: Keith R. Rivers joined as Supervising Senior Auditor . . . J. Clifford Schoep transferred from Electronics and was appointed to Corporate Director-Technology Planning . . . Paul A. Nus transferred from Fort Worth and was promoted to Corporate Manager-U.S. Military Aircraft Programs . . . Charles N. DeMund transferred from Convair and was promoted to Advertising and Promotion Director . . . Randall J. Noorman transferred from Land Systems and was promoted to Auditor . . . William L. Smith transferred from Pomona and was promoted to General Accounting Corporate Manager . . . Mark A. Faust transferred from Data Systems Eastern Center and was promoted to Senior Information Systems Auditor . . . Keith D. Schofield was promoted to Supervising Senior Information Systems Auditor.

Fort Worth: Hoppie Alexander was promoted to Human Resources Specialist . . . Ernest R. Murphy and Michael L. Attridge to Field Engineer . . . Glenn A. Barnes, Mike P. Roundtree and Michael J. Lachance to Engineering Administrative Supervisor . . . Thomas M. Baker, Stephen T. Best, Jimmy D. Durham and Robert J. Lackey to Field Service Engineer . . . Homer E. Boyd Jr. to Material Cost Supervisor . . . Beverly J. Bradley to Manufacturing Control Supervisor . . . George A. Butcher and Marlon D. Grace to Production Specialist . . . James S. Caddell to Project Manager . . . Darryal W. Cavitt and C. K. Hitt to Material Supervisor . . . David M. Cobb to Plant Engineering Night Chief . . . Clyde O. Cope Jr. to Tool Planning Supervisor . . . Donald E. Crittenden to Logistics Engineer . . . Michael J. Cuozzo, David A. Dion Jr. and Wendell G. Fox to Engineering Chief . . . Gary D. Durbin and James M. Roper to Engineering Administrative Group Supervisor . . . Terry M. Fitzgerald to Senior Engineer . . . Timothy E. Kinsella to Manufacturing Technology Supervisor . . . Greg L. Larson to Engineering Administrative Specialist . . . Matt D. Latham to Industrial Security Supervisor . . . Larry K. LeBahn to Material Planning Supervisor . . . Donna S. Livesay and Danny Stuckler to Purchasing Agent . . . Alexander Mair to F-16 Administrative & Finance Manager . . . Jack C. McPhail to Tooling Supervisor . . . Larry Meister to Plans & Controls Chief . . . Garth T. Melville to Senior Process Planner . . . Kelly K. Pace to Material Project Administrator . . . Frances D. Reid to Engineering Group Supervisor . . . James W. Rost and Bennie W. Toney to Project Engineer . . . Paul E. Stark to Production Control Coordinator . . . Michael E. Stover to Design Engineering Associate . . . Glyndel R. Taylor to Manufacturing Control General Supervisor . . . Lonnie L. Vance and Benjamin C. Wiseman to Human Resources Supervisor . . . William L. Vineyard to General Foreman.

Electric Boat: Peter M. Green was appointed to Purchasing Director . . . Frederick Harris was promoted to Engineering Manager . . . James Essery to Configuration Management Chief . . . Carl Nicholas to Strategic Weapons System Test Chief . . . Joseph Sachatello to Purchasing Chief . . . Richard LaCroix to Assistant Program Management Chief . . . William Baker to Nuclear Construction Superintendent . . . Leland Bolt and John Shine to Engineering Supervisor . . . Robert R. Brown to Purchasing Agent . . . Larry Buckowsky to Assistant Superintendent . . . Kirk Damiels to Weight Estimating Supervisor . . . Ronald Donovan to Assistant Superintendent . . . Debra Faulk to Small/Disadvantaged Business Administrator . . . Lawrence Gadrow to Foreman . . . Kenneth Gauthier to Technical Illustration Supervisor . . . Gerald Laraverse to Assistant Superintendent . . . Brenton Lynch to Design Supervisor . . . Joseph Papalia and Raymond Rogers to General Foreman . . . Mark Testoni to Security Services Supervisor. At Quonset Point, Edward Halpen to General Foreman . . . Paul Ciccone to Foreman.

Electronics: Donald A. Anderson was promoted to Senior Operations Specialist . . . Donald K. Dearduff to Senior Test Engineering Specialist . . . Clifford S. Puckett to Marketing Representative . . . Jon A. Hixon to Engineering Drawing Checker . . . Christine L. Kerbow to Engineer . . . Jerry Nasser to Senior Industrial Engineer . . . Willard R. Tabor to Senior Engineering Specialist . . . Gerard W. White to Test Engineer . . . Beverly S. Williams to Project Manager.

Pomona: Nicholas A. Rossman was appointed to Procurement Director . . . Robert D. Salyer to Material Director . . . Joseph G. Hirsch to Sparrow Program Director . . . Donald E. Briney, Richard A. Berard and Herbert E. Gorecki were promoted to Group Engineer . . . Judith A. Brown to Manufacturing Group Engineer . . . Robert E. Brown to Plant Engineering Chief . . . Karen L. Lynch to Logistics Specialist . . . Larry G. Malm to Section Head . . . Nathaniel D. Pendleton, Michael A. Sloan and Ronald L. Miller to Project Administrator . . . Andre Solomon and Paul Z. Yamas to Assistant Project Engineer . . . Darryl J. Trulin to Engineering Staff Specialist . . . LaVerne D. West to Equal Employment Opportunity Manager . . . Bernard B. Belant to Property Management Manager . . . Walter J. Carver and Joe J. Solano to Accounting Chief . . . Wendell R. Garner, Stewart F. Kushin, Eugene Thomas and Lilian Vermillion to Estimating Chief . . . Neil R. McLaughlin to Chief Pilot . . . Michael H. Robson, Teresa A. Roy, Roger J. Smith, Sharon L. Hively, Thomas M. Lill, David E. Moxley and Craig D. Olson to Design Specialist . . . Gerald G. Rojewski to Engineering Specialist . . . Duane F. Hawkins to Production Support Chief . . . Mark R. Roberts to Project Engineer . . . Lawrence E. Virgoe to Telecommunications Systems Chief.

Valley Systems: Richard A. Mancini was promoted to Group Engineer . . . Susan K. Pixley to Quality Assurance Group Engineer . . . Robert C. Corey Jr. to Project Representative . . . Veronica A. Fisher to Cost Control Chief . . . Linda K. Mashburn to Manufacturing Supervisor . . . Marion C. Renner to Project Coordinator . . . Kaye B. Willet to Marketing Representative.

Space Systems: Robert M. Grunewald was appointed to Contracts Director . . . Carl F. Emde to Market Development & External Relations Director . . . Richard L. Neal to Ethics Director . . . Michael F. Jensen and William C. McPike were promoted to Engineering Chief . . . Michael F. Schweitzer to Quality Assurance Chief.

Convair: Norman N. Pearl was appointed to Fabrication & Production Engineering Director . . . Kirk P. Gregg and Betty A. Krause were promoted to Human Resources Supervisor . . . Gary D. Miller to Human Resources Manager . . . Stuart D. Phelan to Quality Assurance Manager . . . Raymond J. Stoeser to Finance Chief . . . Thomas L. Webb to Manufacturing Operations General Supervisor.

Land Systems: Edward J. Stempien was promoted to Industrial Engineering Specialist . . . Masood Parvaze to Production Management Specialist . . . David L. Valenti to Senior Quality Assurance Analyst . . . Ralph E. Klims to Program Management Chief . . . Paul V. Williams to Health and Safety Specialist . . . Kundanlal N. Shah to Manufacturing Programs Staff Specialist . . . Carolyn Y. Morgan to Audit Specialist . . . Paul Quesada and Medhat S. Anis to Group Engineer . . . Robert H. Granzow Jr. to Engineering Supervisor . . . Ralph A. Scarantino to Engineering Program Chief . . . Darrell E. Duszka to Engineering Specialist . . . Finley W. Collins to Foreman . . . Shelly A. Reminder to Senior Financial Analyst . . . David C. Ruhlman to Quality Assurance Engineering Specialist . . . Ronald Trawczynski to Contracts-Plant Manager . . . Michelle M. Urbanczyk to Material Planning Specialist . . . Rene R. Montilla to Industrial Engineering Specialist-Sterling . . . Krishnakum V. Das to Senior Industrial Engineer . . . Robert J. Rogers and Charles H. McCauley to Training Supervisor . . . Sharad Kumar to Engineering Manager . . . Gilbert S. Rice to Quality Control Engineering Supervisor . . . Ricky L. Fox to Skilled Trades Maintenance Foreman . . . Paul Thomas to Plant Engineering Supervisor.

GDSC: Allan F. Radcliffe was promoted to Program Manager . . . James W. Sexton to ALMS Project Manager . . . Jerry W. Rhodes to Maintenance and Material Control Manager . . . Joseph Sayyed to Financial Specialist . . . Deborah A. Ackley to Senior Accounting Analyst . . . Gerald L. Hone to Associate Buyer . . . Richard J. Lee to Proposal Cost Development Manager . . . Ruth L. Wood to Proposal Development Manager . . . James A. Devine to Program Administration and Logistics Supervisor . . . Richard A. Haseman to Project Engineer . . . Frank B. McKenzie to Senior Program Support Specialist . . . Jesse I. Craft to Senior Industrial Engineer . . . Wendell H. Hamlet to Senior Human Resources Representative . . . Mary Ellen Ramsayer to Senior Accounting Specialist.

Data Systems: At Western Center, William C. Evans was appointed Deputy Center Director-Pomona/Valley Systems Site . . . Frank A. Guthrie was promoted to Senior Production Control Analyst . . . James C. Kwai to Engineering Software Supervisor. At Central Center, A. J. Fidler to Purchasing Agent . . . Kathleen J. Ramey to Finance Manager. At Eastern Center, Paul S. Funk to CAD/CAM Manager at the Land Systems site . . . George P. Panciera to CAD/CAM Manager at the Electric Boat site.

Convair's Bob Wagner to Cycle 1,200 Miles Through Baja for Christmas

During the year-end holiday break, when most people are enjoying traditional turkey dinners and visions of sugarplums, long-distance cyclist Bob Wagner of Convair will be experiencing bumpy roads, remote desert campsites and visions of a tall, cold drink at the end of a hard day of riding.

Wagner is leading a bicycle tour called the Baja XII from the Mexican border town of Tecate 1,175 miles south to the tip of the Baja peninsula. He has led all 12 of the tours, over as many years.

Wagner belongs to the Knickerbikers Club of San Diego. Some of the club's members will be with him on the trip, along with other cyclists from around the country who want the challenge of a Baja California Christmas adventure.

The tour is not for beginners, Wagner said. "You have to be physically prepared, but most importantly, mentally prepared," he said. Bicycles must also be in superior condition, he said, because the short winter days with rapidly descending darkness don't allow time for roadside maintenance. Each day of riding averages 75 to 80 miles.

A description of a typical day on the tour from the itinerary put together by Wagner: "Today we climb to 2,690 feet, then drop to areas of dry lake beds and miles of desert. We will camp at the Rosarito Trailer Park after 98 miles of riding. There is no hot water, no electricity. There hasn't been a shower head for the last two years, and the water comes out in a solid stream. You will be too tired to care."

But the tour also has its rewards, Wagner said. For example, on the ninth day, the cyclists see the Gulf of California for the first time. They will spend Christmas Day in La Paz and go snorkeling off Puerto Balandra. Two days later, the trip ends at Cabo San Lucas — the southernmost tip of Baja California.

Wagner also leads a San Diego-to-Denver tour during the summer. The summer tour's route takes cyclists through some of the hottest country in the United States.

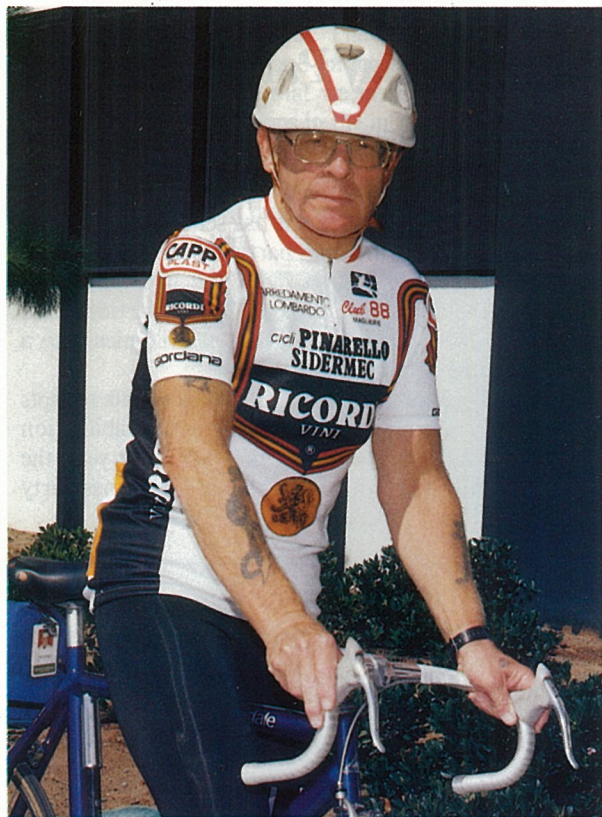
Last summer, after riding his bike 1,200 miles to Denver, Wagner flew home and was up the next day at 4 a.m. to resume his daily 38-mile commute — by bicycle — to the Convair Kearny Mesa plant, where he works as a Quality Assurance Specialist.

Wagner owns six bikes and uses one especially for commuting. On the Baja trip, he will ride a 15-speed, custom-built "Platano," one of only 21 built in 1977. But it all started with a Schwinn.

"I got involved back in 1974," said Wagner. "I was trying a weight-loss program. I got on a friend's old bike and took a spin around the neighborhood. From there, it has been total insanity."

What motivates Wagner and fellow cyclists to undertake a grueling adventure like the Baja XII?

"There's a camaraderie that you never lose once you've suffered together," said Wagner. "You go your own separate ways, but years later you'll run into one of the people you were with and you'll instantly remember the experiences you shared — in detail. It's bicycle touring at its finest — the bitter with the sweet."



Convair's Bob Wagner is ready for Christmas in Baja

Freeman United Products Include Apples Along With Coal in Illinois

Freeman United Coal Mining doesn't only produce coal — it produces apples and peaches from an orchard planted on reclaimed land more than 40 years ago.

The General Dynamics subsidiary was reclaiming mined land long before it was required to do so by law. In 1939, employees of the company's Fidelity Mine No. 11, near Du Quoin, Ill., planted acres of trees on a tract that is now known as Fidelity Farms.

Fidelity Farms has 35 acres of apple, peach and nectarine orchards that produce fruit that is graded and pack-

aged at an outbuilding on Fidelity property each fall. The fruit is then sold at the farm by the bushel and peck.

There are two full-time employees at Fidelity Farms. Additional employees are hired on a seasonal basis during harvesting.

The farm was originally established as part of a state forestry program, but the company decided to continue the project after the state withdrew at the onset of World War II, said Bill Smith, Freeman United's Manager of Reclamation. "Historically, the company took it on its

own to demonstrate that mined land is not wasteland," Smith said.

In addition to orchards, the company also owns the 2,200-acre Fidelity Forest, which has about 2.5 million oak, ash, walnut and black locust trees.

"We have a total farm operation also," Smith said. "There are several hundred acres of cropland, and we have a full line of farm equipment. It is all done on reclaimed ground."

Ron Stroud Overcomes Obstacles to Achieve His Goal of Solo Flight

Ron Stroud had wanted to learn to fly an airplane for as long as he could remember, but he didn't know if he'd ever have the opportunity. Stroud suffered a spinal cord injury in a motorcycle racing accident 10 years ago.

The Fort Worth engineer said he felt encouraged about his prospects of flying after learning that some individuals who have lost the use of their legs, as he did, are able to pilot airplanes with the aid of a device that converts rudder

pedal control to hand control.

That still didn't totally solve his problem, though.

Because of his injury, Stroud also has limited manual dexterity, which makes it difficult for him to grip a steering yoke or throttle. He has been driving a specially equipped van for several years, but there is no equipment available commercially that would make it possible for him to fly an airplane.



Preparing for Takeoff. Fort Worth employee Ron Stroud sits in the cockpit of his Cessna Cardinal with hands on the special controls that enable him to fly.

Through a combination of his own determination and engineering ability, the help of friends in Fort Worth and in his hometown in Georgia, and the design features of a late '60s-vintage Cessna Cardinal, he fulfilled his ambition recently by making his first solo flight.

Stroud, who works in the Subsystems and Weapons Integration group in Fort Worth's Advanced Design Department, began working toward his goal in earnest two years ago. He felt so confident about reaching the goal that he bought his own airplane in late 1985, even though he hadn't started taking flying lessons.

"It would have been a big headache to install special controls in a rented or borrowed airplane every time I wanted to fly and then remove them when I finished," he explained. "It looked like the only way I could do it was to have my own aircraft."

Using the controls in his van for inspiration, Stroud designed a system that allows him to control aircraft pitch and roll with his left hand, while controlling the throttle and rudder with his right. Staten Sellers, a longtime friend who owns a machine shop in Swainsboro, Ga., fabricated the equipment for Stroud.

The Cessna Cardinal has design characteristics that helped Stroud overcome another problem, entering and exiting the cockpit. "The airplane has a strutless, over-the-cockpit wing and a wide door," said Stroud. "It sits low to the ground, and the main landing gear is fairly far aft of the door, which also helps."

In addition to overcoming the physical challenges, Stroud had to obtain a special medical certificate from the Federal Aviation Administration. "The FAA inspectors were really impressed when they saw how we modified the controls," he said.

Lee Long, a Training Requirements Specialist in Fort Worth's Engineering Department and a veteran private instructor pilot, gave flying lessons to Stroud over a six-month period. "I took a few weeks just to familiarize myself with the equipment. Then I taught him the same way I'd teach anybody else," Long said. "He was an excellent student."

Stroud said he enjoys flying because of the proficiency and precision it demands and because of the feeling of mobility it offers. "It's a good feeling, traveling 120 mph over any kind of terrain," he said. "Anyway, I may feel a little more bound by gravity than most folks."